The HARBOUR of MONTREAL

ANNUAL REPORT
1924

ANNUAL REPORT

OF THE

Harbour Commissioners

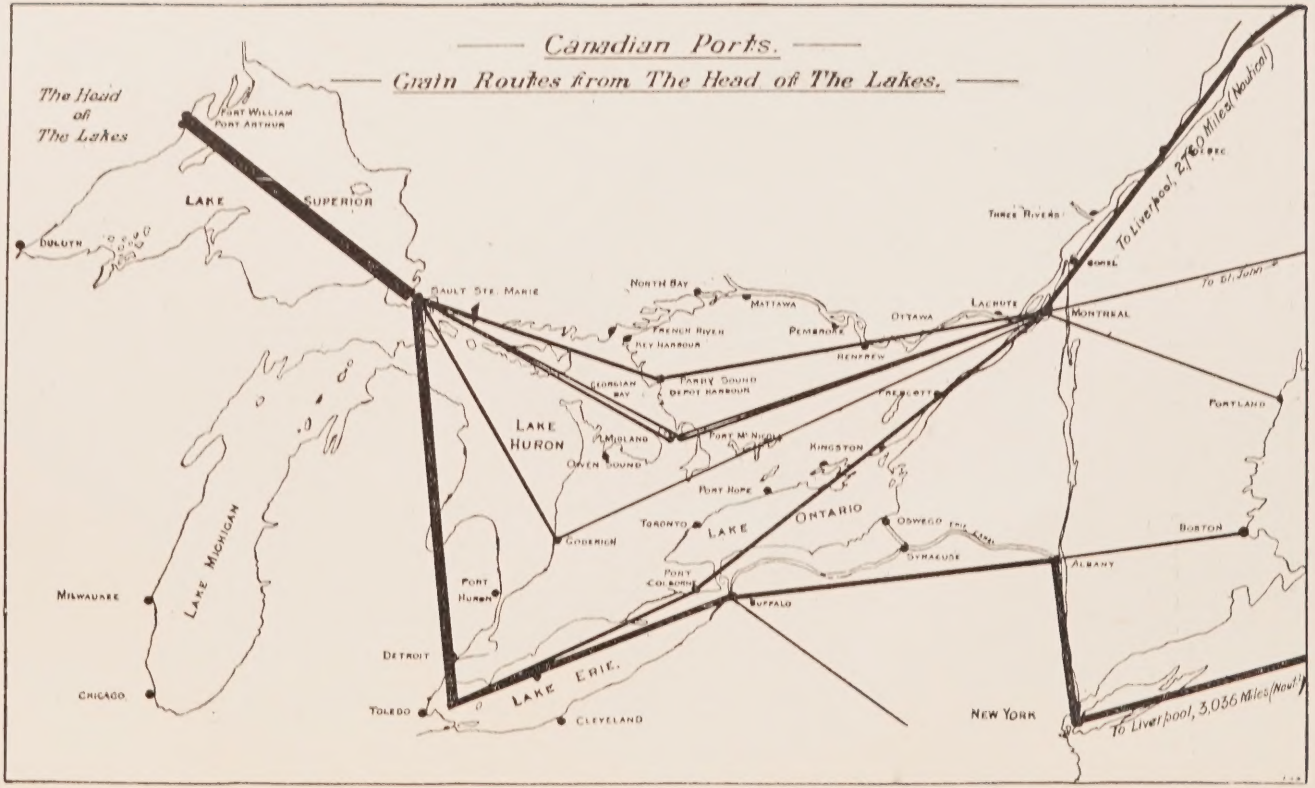
of Montreal

For the Year 1924

COMMISSIONERS:

W. L. McDOUGALD, President

EMILIEN DAOUST MILTON L. HERSEY


Canadian Ports.
Grain Routes from The Head of The Lakes.
The Head of The Lakes
PORT WILLIAM
PORT ARTHUR
LAKE SUPERIOR
DULUTH
SAULT STE. MARIE
NORTH BAY
MATTAWA
FRENCH RIVER
KEY HARBOUR
PARRY SOUND
DEPOT HARBOUR
GEORGIAN BAY
LAKE HURON
MIDLAND
OWEN SOUND
PORT McNICOLL
GODERICH
PORT HOPE
TORONTO
LAKE ONTARIO
PORT COLBORNE
BUFFALO
PORT HURON
DETROIT
LAKE ERIE
TOLEDO
CLEVELAND
CHICAGO
MILWAUKEE
LAKE MICHIGAN
PEMBROKE
RENFREW
OTTAWA
LACHUTE
MONTREAL
THREE RIVERS
QUEBEC
To Liverpool, 2760 Miles (Nautical)
To St. John
PRESCOTT
KINGSTON
OSWEGO
SYRACUSE
ALBANY
BOSTON
PORTLAND
NEW YORK
To Liverpool, 3,036 Miles (Nautical)

Harbour Commissioners of Montreal

MONTREAL, 1st April, 1925.

To the Hon. P. J. ARTHUR CARDIN, M.P.,

Minister of Marine and Fisheries,

Ottawa, Ont.

Sir:—

In compliance with Section 51 of the Commissioners' Act 57-8 Victoria, Chapter 48, the Harbour Commissioners of Montreal herewith respectfully submit their Annual Report of operations for the year ended 31st December, 1924.

We have the honor to be,

Sir,

Yours very respectfully,

W. L. McDOUGALD, President.
EMILIEN DAOUST
MILTON L. HERSEY,
Commissioners.

IN PRESENTING their Annual Report for the year Nineteen hundred and twenty-four, the Harbour Commissioners of Montreal wish to express their recognition of the unfailing support and courteous co-operation of the Minister of Marine and Fisheries, the Hon. P. J. Arthur Cardin, and his Deputy Minister, Mr. Alexander Johnston, and the other officers of the Department at Ottawa, whose kindly interest has been of very material assistance to them in the solving of the many problems which they were called upon to deal with during the year.

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of Montreal
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FOREWORD

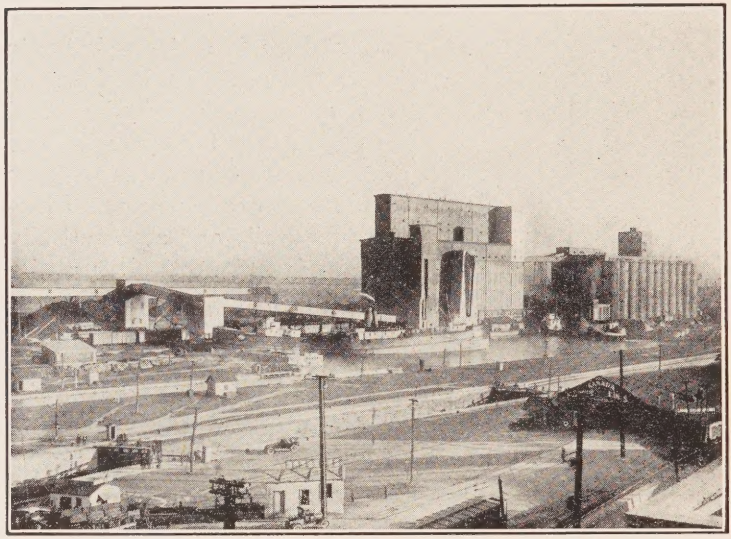
From one season to another there is little variation in the routine of business at the Harbour, save what is represented by the totals of tonnages and quantities received and despatched, of receipts and expenditures for operating and enlargements and of arrivals and departures as these compare or contrast with the corresponding figures of the years preceding. These records fall quite naturally and automatically into tables, the formula of which has been fixed by the practice of many years. The tables which constitute the major part of the contents of the ensuing pages would appear to casual observation to possess no more interest than would the pages of a book of logarithms. Nevertheless, they make up for the most part the pregnant story of the Port and Harbour of Montreal for the calendar year 1924. They are the official record of the doings of the Harbour Commissioners in that period. Though they deal with affairs maritime there is not much of the romance of the seas to be extracted from them; yet the economic historian of a future age, in his efforts to trace the commercial development of a great people and the growth and expansion of their national port to a premier position amongst the ocean ports of the world, will ponder and dissect every line and figure of the record.

An unusual number of noteworthy and significant records and incidents in the history and progress of the Harbour are associated with the year 1924:

(1) The movement of grain attained the record total of 165,139,399 bushels received and 159,159,688 delivered

out; of the receipts 95,054,716 bushels were the produce of Canada, 68,659,959 were the produce of the United States, and 1,424,724 were the produce of Argentina.

(2) Grain Elevator 3 came into commission in September, while the annex to Elevator "B," with a new system of galleries, was completed, thus augmenting the rated grain storage capacity of the Harbour by 3,250,000 bushels, or about 30%; and affording a potential receiving and delivering capacity in the season of navigation of at least



VIEW OF ELEVATOR "B" SHOWING ADDITIONAL STORAGE COMPLETED DURING 1924

200,000,000 bushels. At Elevator "B," on July 8th, 274,590 bushels of wheat were loaded through four spouts from the new conveyor gallery into S.S. "Innerton" in $6\frac{1}{4}$ hours, which, it is said, constitutes a record.

(3) The number of ocean-going vessels which arrived in Port, 1223, and their gross tonnage, 4,096,332, exceeded the record of any other year. The number of trans-atlantic vessels which arrived in Port, 988, and their

gross tonnage, 3,597,147, also exceeded the record of any other year. The grand total of the tonnage of all vessels, maritime and inland, which arrived in Port, 15,312,096, far exceeds any previous record, though their total number, 7,014, was exceeded in two other years, 1915 and 1919, when, however, the total tonnages were substantially less.

(4) The Cold Storage Warehouse has set up some extraordinary records: Butter stored totalled four times, and Cheese—all Canadian produce—twice the quantity stored in 1923; these totals being also, in the one case, more than eight times, and in the other more than four times the corresponding figures for 1922, the first year of operation. Meat stored totalled more than twice the quantity accounted for in 1923, and more than six times the 1922 total.

(5) The inauguration of a Montreal-Mediterranean steamship service by the Lloyd Mediterranean Co. of Italy.

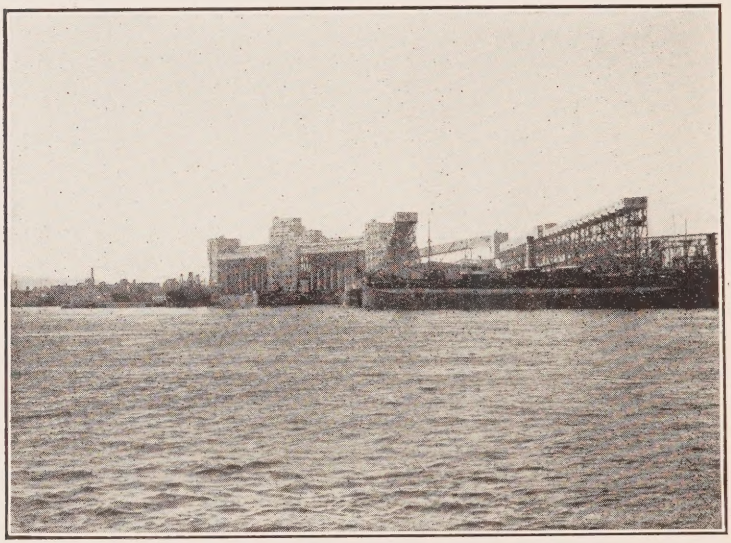
(6) The passing of legislation by the Parliament of Canada, enlarging the powers of the Harbour Commissioners so as to enable that body to carry out the project for building a highway bridge from the Island of Montreal to the South Shore.

All of the foregoing will be found dealt with in detail in the ensuing pages.

THE MONTREAL-SOUTH SHORE BRIDGE

During the year the South Shore Bridge project was definitely advanced out of the realm of vision to that of actuality. Pursuing the line of procedure suggested in the Annual Report for 1923, the Commissioners were able during the sitting of the Dominion Parliament to bring forward a program sufficiently tangible so that Government decided to propose to Parliament legislation for enabling the undertaking to be proceeded with as soon as practicable. An Act, 14-15 Geo. V. Chap. 58, was passed with the unanimous consent

of the Commons and Senate and assented to July 19th, 1924, which amended An Act to Amend and Consolidate the Acts relating to the Harbour Commissioners of Montreal, 57-58 Vic. Chap. 48 (1894), for enabling the Harbour Commissioners, as the appropriate authority, since the bridge will be an appurtenance of the Harbour, to determine its site and to proceed with the designing and erecting thereof subject to the approval of plans by the Governor-in-Council; with necessary powers of expropriation; of fixing tolls; operating and managing; with



View of Elevator No. 3

provision for mortgaging and pledging and for creating hypothecs; of issuing bonds which may be guaranteed by His Majesty the King, etc. The text of the Act, as assented to, is printed as Appendix A at the end of this volume.

The announcement of the action of Parliament was received locally, by press and by public bodies, with practically unanimous and unrestrained satisfaction. A typical pronouncement was that of The Gazette, in its issues of July 15th and 17th, paragraphs from which editorials are herewith reproduced

since they so succinctly and sufficiently state the position of the matter as it was before Parliament:

"The liveliest satisfaction will be felt at the prospect, raised by a Government notice of motion to confer the necessary powers upon the Montreal Harbour Commission, that a new bridge connecting the city with the south shore of the St. Lawrence will become a reality within a measurably brief period. The construction of such a bridge is long overdue, the existing facilities having for years past proven inadequate to both of the two purposes which the contemplated structure will serve, one being the carrying of a huge and constantly-growing local and international vehicular traffic and the other the providing of access to St. Helen's Island, a civic asset second in value only to that magnificent public heritage, Mount Royal Park.

"The Ottawa despatch announcing the Government's action intimates that the work will be financed by a bond issue, and the inference is that, unlike some other projects of less importance and necessity, it will make no direct call upon the public treasury. Presumably the bonds will be guaranteed by the Government, but such a pledging of the national credit will in this instance be a mere formality, in view of the fact that the bridge is certain to be a producer of revenue from the day of its completion, this being assured by the volume of existing traffic, not to mention the large increase which is inevitable in the interval.

"It is unlikely that any voice will be raised in opposition to a project which, national and international in its character as this is, meets to an unusual degree the definition of being to the general advantage of Canada. It will furnish another and much-needed transportation link between Ontario and that portion of Quebec north of the St. Lawrence on the one hand, and on the other the southern portion of the province, the Maritime Provinces and New England and the other eastern states. It is not generally realized that Victoria Bridge is at present the only structure available for vehicular passage across the long stretch of the inland waterway between Niagara and the Atlantic, and the growth of Montreal and the phenomenal increase in the use of the motor car render imperative the supplementing of that single artery with a modern highway bridge designed to carry a volume of travel for which the former was never intended and to which it cannot be adapted. This condition has been increasingly apparent for several years past, with the result that there has

been an insistent demand for a new bridge from representative bodies and individuals, with the Province of Quebec Tourist Association taking a leading part in the movement ever since its organization.

"The new bridge will also serve as a final and conclusive reason, if such were needed, for the instant rejection of the impudent proposal to establish an amusement resort on or near the top of Mount Royal Park. If any such an enterprise is deemed to be a necessity for the people of Montreal, there will be ample space available for its establishment on St. Helen's Island, while at the same time permitting the preservation of those scenic beauties of the island which have remained all too little known to the mass of the citizens. With the new bridge providing ready means of access, St. Helen's Island will immediately, by right of its enviable natural advantages, take its due place in the civic scheme and give the fortunate people of Montreal an alternative place for healthful and happy outing."

And again on July 17th:

"Members of the official Opposition who participated in the debate upon the South Shore bridge project cannot be congratulated upon their strategy. Professing to approve of the enterprise, they yet advanced such objections as to cast doubt upon their sincerity, putting themselves in the position of captious critics and hair-splitters. Hon. Mr. Meighen certainly displayed ineptitude in his endeavor to stand on both sides by admitting the desirability of the bridge and at the same time objecting to the method of its construction. The attack of Mr. Hanson upon Dr. McDougald, chairman of the Harbour Commission, was as uncalled for as it was unjustifiable. One does not need to approve Dr. McDougald's politics to recognize his ability, energy and fine public spirit, and if it be true that 'he serves his party best who serves his country best,' then is the chairman of the Commission rendering excellent service to his political friends. The fact that Dr. McDougald is a Liberal no more disqualifies him for the position he holds than did his Conservative allegiance disqualify Dr. McDougald's predecessor, and it ought to have been known to Mr. Hanson that the office of Harbour Commissioner, rightly or wrongly, has long been a piece of party patronage.

"The contention that the bridge should be built by the Government through the agency of the Public Works Depart-

ment and not by the Harbour Commission is carping, much a matter of tweedledum and tweedledee. In either case liability and responsibility fall upon the Government precisely as does the management of the Canadian National Railway. But the Harbour Board is the appropriate authority since the bridge will be an appurtenance of the harbour. Nor is control of construction and operation by the Harbour Commission a new intent. Nearly two years ago, on August 14th, 1922, an order-in-council was passed, appropriating $50,000 to the Commissioners for the purpose of investigating the project, especially in its relation to the interests of the harbour, of making surveys, soundings and borings so as to determine the most safe and suitable site, and to prepare preliminary or suggestive designs and plans. This action was a distinct recognition that the Commission as administrator of the harbour is the proper authority to control construction of the bridge, a conclusion to which no objection was made at the time nor since until the decision to go ahead was arrived at. There is no stronger reason for placing the bridge under the Public Works Department than there is for giving that branch of the Government the management of the cold storage plant or of the grain elevators of the port; and we are convinced that the public will approve a course which takes the erection of an expensive bridge out of the hands of the Government and places it in those of a Board whose capability, efficiency and care for economy have been amply demonstrated.

"The debatable point in connection with the project has been that of location in relation to cost. Two plans were proposed by the engineers, designated 'A' and 'C.' Scheme 'A' contemplated linking the north and south shores by a line of communication under the Commissioners' control, providing facility for vehicular traffic, tram tracks, and ultimately steam railways. Embraced in the project is the development of St. Helen's Island into a public park accessible from both shores. The bridge would extend from Delorimier Avenue at Dorchester Street to and across St. Helen's Island to the south shore, with spans sufficiently above the water level to avoid impediment to navigation. Scheme 'C' contemplated erection of a highway bridge immediately below and alongside Victoria Bridge, with a roadway of 30 feet, the cost of which was estimated at about one-half that of the other plan. The Commissioners were at first favorable to this scheme on the ground of economy, and so reported to the Government in May, 1923. More mature consideration, however, has altered their view, and scheme 'A' has now been approved. We believe the larger project better. It

will provide greater facilities, be equally free as the other from interference with navigation, and will give access to St. Helen's Island. Cost will, indeed, be considerable, probably not less than $10,000,000, but the sources of revenue are large and constantly increasing.

"It is not unreasonable to require that the province and adjacent municipalities should contribute to the cost by way of guarantee of bonds if not by subsidy of money. The Harbour Commissioners have always had in view such assistance, particularly in the event of the plan now adopted being proceeded with, Dr. McDougald in a report remarking that 'the public park development and the provision of transit facilities thereto are strictly municipal or provincial undertakings.' Montreal and the south shore municipalities, as well as the provincial Legislature, are justified in extending aid to a project calculated to promote the interests and prosperity of a large community. Motor traffic has solved the problem of cost which for many years stood in the way of construction of a second bridge across the St. Lawrence, and, now that the work has been committed to capable administrators it may confidently be expected to proceed expeditiously, economically and to the advantage of the people and port of Montreal."

Following these declarations, as well as certain expressions in a contrary sense in other influential organs, an energetic campaign was developed in the public press and through certain local associations with regard to the policy to be pursued by the Commissioners in the discharge of the onerous responsibility imposed upon them by Parliament, it was considered to be opportune to set forth categorically the development of the circumstances which led up to the action of Parliament; as well as the general lines of policy to which the Commissioners proposed to adhere.

Accordingly the President of the Board issued to the City press a formal statement as follows:

"The legislation which received Royal assent at Ottawa on Saturday last amending the Act of Parliament relating to the Harbour Commission of Montreal so as to enable that body to carry out the building of the South Shore bridge marks the commencement of a new era in the municipal and metropolitan development of the City of Montreal.

"Nothing that has happened in the last generation, with the possible exception of the entry into the city of the Canadian

Pacific Railway's transcontinental line, can have such far-reaching consequences both in the expansion of the city and in its physical reorganization into the centre of a great metropolitan area. This is the first real step in the scheme of town-planning for which so many public-spirited citizens have striven. Its consummation will transform Montreal into what nature designed it should be, the loveliest and most entrancing of the greater cities of America.

"When carried out upon the designs contemplated, it will afford a gateway of unexampled grandeur into the City of Montreal, not only for the great and increasing agricultural and commercial traffic of the Townships and the eastern portion of Quebec lying south of the river, but for the rapidly-developing international traffic as well. The present conformation of streets and highways leading away from the bridge terminal at Delorimier Avenue and Craig Street will lend themselves readily to the best type of modern park and city boulevard development, at the same time that the street congestion prevailing at any other possible terminus at the west end of the harbour will be avoided.

"If city development elsewhere in America affords a suggestion, I would consider that the whole of the area lying to the west of Delorimier Avenue south of St. Catherine Street and extending to Bleury Street would be gradually and rapidly transformed from the slum character which affects a considerable part of it at the present time into a great commercial and industrial area.

"I would not seem to depreciate the valuable contributions of others in forwarding this project. Much well-directed energy was applied by many public-spirited citizens and by public bodies to finding some solution of the transport needs between the Island of Montreal and the mainland at the south. These efforts appear to have lacked concerted action, and while incessant, they were generally fugitive and spasmodic. Either the time was not opportune, population appeared to some calculators to be not large enough to support such a venture, or circumstances such as the late war intervened to cause postponement of realization. Besides, there was always the difficulty of determining how to apportion the burden of cost and the risk between the Federal and Provincial governments and the municipalities concerned. There was no organization actually in existence at any time capable of undertaking even the preliminary studies and surveys upon which to base a tangible project. In these circumstances the proponents of the idea appear always to have looked to the Harbour Board as the

organization which by reason of its intimate concern in navigating equipment, was in the best position to undertake the burden. There was no theory upon which the Public Works Department of Canada could be appealed to, as, aside from its character as a project affecting navigation and thus in the purview of the Harbour Board, it could not be deemed a federal work. No doubt it was also in the recollection of many that the initiation of the first St. Lawrence River bridge, the Victoria tubular, was largely due to the activities of the then Harbour Board while the supervision of its erection was confided to the chief engineer of the harbour of that day, T. C. Keefer.

"When the present Commissioners took office early in 1922, this question was pressed upon their attention with great insistence while concurrently the urgency of the case was being diligently pressed upon the new federal Government. The Commissioners were successful in obtaining the authorization by order-in-council dated August 14, 1922, for the expenditure of $50,000 of harbour funds for the purpose of the preparation of designs and to cover the necessary soundings, surveys, borings, etc., so as to locate a suitable site for a bridge. Pursuant to this authority the Commissioners proceeded with the greatest diligence to carry out the mandate now for the first time confided to the Harbour Board or to any other agency. Their own well organized engineering department, manned by T. W. Harvie, then chief engineer and now general manager, and Mr. Paul Leclaire, present engineer-in-chief, both of whom through many years of service and high achievement at the harbour have acquired not only enviable professional standing, but an intimate and exact knowledge of all harbour conditions. Moreover, the engineering department, having for many years kept *au fait* of all of the many proposals which have been brought forward looking to a solution of the problem, had accumulated a large store of information and data on the subject.

"Several suggestive designs had been prepared at one time or another, that of Mr. Cowie in 1909 for a low level bridge from McGill Street and one by the Dominion Bridge Co. to parallel Victoria Bridge. There were other fugitive sketches, yet the whole matter was still in a nebulous state and was really no further forward than it was twenty-five years ago. The story of the connection of the Commissioners with this enterprise during the last three years is fully set forth in their annual report for 1923. Upon the passing of the order-in-council the Commissioners with the least possible delay caused

steps to be taken so that designs, maps, plans, and estimates in considerable detail were produced, all of which were transmitted in due course to the Minister of Marine and Fisheries at Ottawa.

"Two principal designs were evolved and are known as the designs of Mr. Harvie, one for a bridge paralleling the Victoria Bridge and the other for a low level bridge extending from Bridge Street across the entrance to the Lachine Canal, thence to St. Helen's Island, and on to the mainland, the cost of which was at that time fixed at approximately $12,000,000. The necessity imposed by this design of recasting the entire canal basin and portal, as in the case also of the Cowie plan of 1909, with the great cost and delay which this would inevitably entail, as well as the dislocation of shipping which would result during the period of construction, precluded this design from serious consideration. Other factors affecting a terminal in the vicinity of McGill Street are the congestion of traffic and of industry already established there and in the vicinity.

"Tentatively the Commissioners were disposed to favor the plan for paralleling Victoria Bridge, estimates for which fixed the cost at about $3,000,000. It was considered that such a bridge would relieve the normal probable traffic demands for a considerable period; that the capital outlay would be within limits conforming to standards of economy and retrenchment then needing to be enforced; that the interests of shipping would not be affected, and that the concern of the Commissioners for reserving running rights for their terminal railway over the bridge would be conserved so as to assure access to harbour sites on the South Shore. The Commissioners, moreover, viewing the project entirely in its utilitarian aspects as a harbour work, felt reluctant to urge the outlay of public monies on the collateral features of the St. Helen's Island bridge design, namely, the public park development, without assurance of participation in the cost upon the part of municipal and provincial authorities whose province it would be strictly to develop such features.

"The Commissioners, while presenting these tentative and alternative programs, were not themselves convinced of their suitability or that a solution had been found. Resolved to discover the best possible ways and means of meeting the public necessity manifestly existing, the Commissioners continued to pursue their inquiries because it was strongly urged upon them by many individuals and others concerned that they alone appeared to have the means and facilities for doing this and,

at the same time, had an appropriation of public money for the purpose. They were influenced, besides, by the consideration that, in any event, whatever project might be able to be brought forward under any other initiative would in the final analysis have to be dealt with by them as affecting harbour and shipping interests.

"In the spring following it happened that, during a short visit in San Francisco, the project of the Golden Gate Bridge Association was brought to my attention, and I was so much impressed with what they were undertaking there, and with the character of the design and type of structure adopted, that I was brought into touch with Joseph B. Strauss, of Chicago, presently a member of the Engineering Institute of Canada, who developed the designs and plans. Subsequently Mr. Strauss proposed to the Commissioners that he would come to Montreal to survey the situation here. This, with their acquiescence, he did, occupying considerable time in his preliminary studies. His tentative recommendations were the basis of my communication to the meeting of the Union of Municipalities of the Province of Quebec at Sorel in December last. The Commissioners afterwards engaged Mr. Strauss, in association with their own consulting engineer, Mr. Cowie, to develop his recommendations, and to prepare designs, plans and estimates. Mr. Strauss' preliminary studies led to the adoption of what is now called the Delorimier Avenue site.

"At this time it came to our knowledge that Messrs. Monsarrat & Pratley, of which firm Col. C. N. Monsarrat, consulting engineer of the Canadian National Railways, is principal, were also engaged in developing designs for a bridge having Delorimier Avenue as its city terminal. It was accordingly arranged that the two associations of engineers, namely, that of Col. Monsarrat and his partner and that of J. B. Strauss in association with Mr. Cowie, should be furnished with a 'mandate to designers of projects' as a basis of design, and that these associations should be invited to submit within a limited time, plans, designs and estimates upon a competitive basis upon the same terms as to remuneration and upon identical data. In due course designs according to the mandate, and one alternative design, were received by the Harbour Board. The designs, plans, drawings, estimates and calculations so received have been paid for by the Harbour Board upon an agreed basis, and are, therefore, the Board's exclusive property. The commissioners are not tied to any association or scheme, and may, in their discretion, adopt either scheme or plan, in whole or in part, as they may be advised; or they may

evolve a composite plan embracing some or any of the features of those already submitted, and may introduce others if they see fit.

"As all of the material so supplied is highly technical and intricate, the Commissioners, for their information and guidance, decided to obtain independent technical judgment on the competitive designs and plans and estimates received by them. After due inquiry they decided to engage for this purpose the services of Leon S. Moisseiff, of New York, designing engineer and bridge expert, who prepared the plans and specifications for the great Philadelphia-Camden bridge, now building. Mr. Moisseiff, having carefully investigated and checked the material submitted to him, has already furnished the Commissioners with his report. The contents of the two competitive schemes supplied to the Commissioners and of the report upon the same from Mr. Moisseiff have not been communicated by the commissioners to other than the Hon. the Minister of Marine and Fisheries, in whose department they are now lodged.

"These designs involved elaborate and careful examination and study of all factors affecting the project, and occupied many weeks of intensive labor and effort upon the part of the engineers and staffs. Experts having special knowledge of the latest practice in bridge designing and erection, other than the titular members of the Engineering Associations so invited, were engaged in these studies, as well as architects for developing the architectural features of the main structure and its aesthetic possibilities at St. Helen's Island.

"The Commissioners recognize that full responsibility has been cast upon them by the legislation now in operation to determine the type of structure and the manner and method of executing the design to be adopted. They are, therefore, resolved in the discharge of this mandate to fortify themselves with all available sources of information which may be of value in guiding them to their conclusions.

"It is probable, as stated in their comment upon this matter in their annual report for 1923, that they will call into conference with them, if they find it necessary, a small body of engineers of high repute to constitute a sort of independent arbitral board to aid and advise them in the technical interpretation of the sketches and designs before them and in analyzing the specifications accompanying them. The Commissioners will feel in duty bound to overlook no possible source of useful and competent advice, having regard to the magnitude of the undertaking, to the special character of the

engineering problems involved and to the progressive development of the science of bridge building, even during the past decade, occasioned by the vast increase in special types of traffic resulting from freight and passenger motor transit. Actual experience and practice in dealing with this class of problem has been necessarily and largely confined to the United States, where many municipalities have already had to deal with necessities somewhat similar to our own. At San Francisco and at Philadelphia, bridges providing exclusively for pedestrian, vehicular and tramway traffic are now being built, which are likely to take rank as among the greatest structures of the sort in the whole world; indeed, that at San Francisco, called the Great Golden Gate Bridge project, will be the largest bridge ever built.

"These were designed, so the Commissioners have been advised, with special regard to the features and factors which have arisen of late years in providing for those classes of urban traffic very dissimilar from, and often very much more complex, than those which have to be dealt with in the case of a railway bridge. Fortunately, there exists no embargo upon the learning and experience which have been accumulated in carrying out these and other similar large operations in the United States in recent years.

"In Canada, we have not had experience with many large bridge enterprises of this character, none that I can learn of, which involve special local transit problems other than those of rail or tram traffic. We have here to deal with a vast enterprise designed to serve a great and growing metropolitan, inter-urban and agricultural population, added to which and a prime factor in which will be an at present unknown and incalculably great international traffic. There are factors here which render it imperative that the Commissioners in the discharge of their duty to the public should avail themselves fully of the knowledge and experience in their solution which have been accumulated elsewhere as well as at home. It is curious to note that the construction of the two largest railway bridges built in Canada in this generation was attended with disaster, that at Cornwall in 1898, and that at Quebec in 1907. In the light of these incidents, the Commissioners will feel it to be incumbent upon them to observe at every stage of their progress the motto: 'Watch your step.' In this procedure they hope to avoid any affront to any Canadian professional body; on the contrary, they shall be most eager to avail themselves in every way possible, as I have shown has been done in the past, of local talent and facilities.

"During the three years of their incumbency at the harbour, the Commissioners, as I believe is well known, have been rigid in their adherence to the rule of awarding all contracts with which they have to deal upon competitive bids called for in customary fashion and the awards made uniformly to the lowest competent tenderer. They have been sedulous, moreover, in their desire to award all contracts for work and supplies to Canadian operators and producers. They are aware of no reason for departure from these commonplace and matter-of-course rules. They would have been gratified if the gentlemen who have been laboriously deluging the public press with their views and advice as to the principles which should guide the Commissioners in discharging the onerous responsibility which Parliament has unanimously bestowed upon them, had amiably taken note of what has been their practice in the past and their record in this respect. It might have been assumed that their dealings would afford no cause for complaint in this new undertaking."

During the ensuing weeks the Commissioners were required to consider a great variety of representations with regard to all phases of the project. These they felt obliged earnestly to consider. A large amount of time was consumed in pursuing these inquiries, so that it was not until November 19, 1924, that a formal announcement was handed to the representatives of the City press which appeared either in full or in substance in their issues of the 20th. It is as follows:

"That the Harbour Commissioners have at length discovered the formula upon and by which the South Shore Bridge project can be worked out was the announcement made by Dr. W. L. McDougald, speaking for his colleagues, at the conclusion of a lengthy session of the Commissioners at the Harbour Offices late yesterday evening. Habitues of the Harbour Offices have been aware that the Commissioners for weeks past have been engaged in an intensive effort to reconcile conflicting interests and theories with regard to the method of procedure to be adopted and to effect adjustments which would enable concert of action to be developed all round.

"At yesterday's session resolutions were adopted and contracts were sanctioned under which an engineering association was brought into being which will function in the capacity of 'Joint Designing and Consulting Engineers.' At its head are Monsarrat and Pratley, designated as registered engineers, and Joseph B. Strauss, C.E., designated as associate engineer.

"There was also constituted an Advisory Board of Engineers to be composed of five members to be designated upon the basis of a representative of harbour and navigation interests who shall act as Chairman, a representative each for the Province of Quebec and the City of Montreal; a bridge engineer of outstanding rank and prestige and recognized high professional attainments, who shall also act as Chief Consulting Engineer to the Advisory Board; together with another bridge engineering authority of acknowledged professional standing and practical experience.

"Experts who have been designated to serve the latter board and who have signified their acceptances are the following: T. W. Harvie, M. Inst. C.E., late Chief Engineer and present General Manager of the Harbour Board; G. Herrick Duggan, M. Inst. C.E., LL.D., and H. M. MacKay, B.A., B.Sc., Dean and Professor of Engineering, Faculty of Applied Science, McGill University; E. I. Vallee, C.E., Chief Engineer of roads and works of the Province of Quebec; H. A. Terreault, C.E., City Engineer, Montreal. At a later date S. A. Baulne, A.M.E.I.C., Professor Ecole Polytechnique, Montreal, was added.

" 'It is no small satisfaction to the Commissioners,' said Dr. McDougald, 'that they have been able, after irritating and what must have seemed to the onlooking public inexplicable delays, to evolve out of what at one time looked like comparative chaos and irreconcilable conflict, a programme which in their judgment will enable an immediate start to be made in the initial steps of preparation for actual construction. Within the next week a surveying staff will start on surveys, soundings and borings, while the engineers will proceed with the recruiting of their necessary staff at once.

" 'The gentlemen composing the Joint Designing Association of Engineers, besides occupying incontestably high standing in their specialty of bridge designing and constructing, happen also to have acquired perhaps greater knowledge than any others with regard to the specific problems to be solved. Each of them, with his associates and staff, has for more than a year been occupied, at the instance and upon invitation of the Commissioners, in carrying out elaborate investigations and studies of all phases and factors. They have also prepared and elaborated designs and plans for a bridge at an indicated site selected by them, independently each of the other, and these plans have been the subject in turn of a critical analysis by an eminent highway bridge engineer dissociated from any local interest or influence. The problem is, therefore, no new

one to them, and the Commissioners consider that there will be incalculable advantage both in respect to the character of the ultimate result to be obtained, as well as in speeding up, in the combination of their local knowledge, their professional skill and experience, and their having in actual being organizations and staffs highly trained in this type of engineering and therefore able to function at high speed without delay.

" 'It will be their duty at once to collate all data already assembled through any agency whatever, respecting site, design, type, structure, capacity, problems affecting navigation, etc., to examine and report on types adaptable to particular sites under consideration by the Commissioners; to analyze and report upon all projects which have heretofore been brought forward; and, upon adoption of a site, to carry out necessary surveys, borings and soundings; supervise the making of general plans and specifications; and carry forward the project to completion.

" 'All of the matters thus to be collated shall be submitted to the Commissioners and by them to the Advisory Board for examination and review as respects site, capacity, design requirements, etc., which body shall report its conclusions and recommendations in turn back to the Commissioners under a procedure which has been defined. The Commissioners, thus fortified with expert aid and advice, shall be able to determine site and type of structure and finally the design and plan in detail.

" 'I should like very much here to emphasize the fact that the Commissioners completely recognize their quality as public servants and also the natural and proper concern of the public in their proceedings. But they are also cognizant of their own collective and individual responsibilty in their administration of the great public trust which has been confided to them. They cannot, if they wished to, divest themselves of their responsibility, nor can they delegate to or share with others any part of the functions with which they have been endowed by Parliament. In all that they have done, in the premises, in bringing this project forward in the last three years, notwithstanding certain animadversions and a copious flood of gratuitous advice, mostly so little based upon knowledge and study of the situation, they have had and have availed themselves constantly of the advantage of experienced and specialized professional service and advice.

" 'Upon passage of the enabling legislation of Parliament last summer a commentator observed that "the decision to proceed expeditiously was in the nature of a surprise, a sudden

removal of the scheme from the realm of vision to that of actuality"; whilst another facetiously speculated as to whether the chief terminal of the new bridge would be "at Longueuil or at Ottawa." The Commissioners, undaunted either by the suddenness of the surprise or by the dubiousness of the joker, found themselves in the midst of the responsibility of dealing with the drab and prosaic details of the actual business of launching forth this great enterprise and of giving form and substance to the dreams and aspirations of fifty years. They recognized that almost all that had been done before had not got much beyond the stage of agitation and of futile though somewhat earnest conversation.

" 'With the project now taking tangible form, it was inevitable that a great variety of views should be pressed upon the Commissioners and that long moribund schemes should be revived and brought forward. Some of these were not, indeed, lacking in apparent merit, whilst others possessed features of substantial appeal. The Commissioners felt that it was incumbent upon them diligently to pursue every suggestion brought to them, for they were unwilling to risk the possibilty that any proposed solution, however fantastic it might at first appear to be, should be rejected for lack of adequate consideration upon their part.

" 'Much time was consumed in pursuing these inquiries and there was great delay occasioned. Latterly the Commissioners were required to look into the plans and scheme elaborated by Mr. A. J. Lavoie,..and so impressively presented by him. The existence of a right-of-way from the vicinity of McGill Street to the tunnel portal at Lagauchetiere Street, acquired before the war by the Mackenzie and Mann interests and now the property of the Canadian National Railways, was also pressed upon the Commissioners, and it was urged that there should be delay in determining their plans and the bridge location, as the railway might at an early date proceed with the construction of a viaduct so as to connect their tunnel terminal with the harbour and that these projects might be linked up.

" 'Under the arrangements now concluded, the Advisory Board of Engineers will forthwith consider all of these suggestions with regard to site, and it will be their primary duty to dispose of them.

" 'In the contracts which have been entered into, the Commissioners have been careful to provide and to specify that in the development and execution thereof the necessary engineering, drafting and clerical staff in the employ and under

the direction of the Engineering Association shall be maintained and shall be recruited, as may be necessary from time to time during progress, in the City of Montreal and from amongst Canadian professional talent so far as practicable; and further that the specification of materials, in so far as such shall be in the control or under the influence of the Engineering Association, shall be in such terms as to ensure in every way practicable the use of materials of Canadian production and the employment of Canadian artisans and labor.' "

As this volume is being prepared for the press the Advisory Board of Engineers have brought in to the Commissioners their report upon matters submitted to them for investigation. In order to complete the record of proceedings down to this phase the following press statement which appeared in the City papers of January 28th, 1925, is printed herewith:

"Pursuant to the authority given to them under the Act of Parliament passed in July last, the Harbour Commissioners at a stated meeting of the Board held yesterday afternoon have determined the site for the high-level South Shore Bridge. They have fixed the same commencing at a point in the City of Montreal approximately at or near the junction of Delorimier Avenue with Craig and Notre Dame Streets; thence over and across the Harbour Commissioners' tracks at a suitable elevation and across the main channel of the St. Lawrence River to the westerly end of Isle Ronde; thence to a point upon the elevated promontory at the easterly extremity of St. Helen's Island; thence across the island and over the south channel to a point upon the mainland approximately midway between Longueuil and St. Lambert. The general alignment of the bridge will be as nearly as possible in a straight line extending from a northwesterly direction on the Island of Montreal, southeasterly with a slight angle at St. Helen's Island, and across the south channel of the river to the mainland."

The foregoing announcement was given to the representatives of the City press by Dr. W. L. M^{c}Dougald, who stated that this determination was reached by unanimous vote of his colleagues, with whose sanction he was making the announcement; in which also the Board, he stated, has the concurrence of the Minister of Marine and Fisheries, the Honourable P. J. A. Cardin.

"The Advisory Board of Engineers who have been conducting an inquiry and investigation for several weeks into all phases of the physical and technical problem of site of location and suitable type of structure concluded their labors and submitted their report to the Commissioners in formal session on Monday morning last. The report is the unanimous result of the labors of the Board, which held fourteen formal sessions, at each one of which there was a full attendance. Opportunity was afforded at these sittings to the proponents of any proposal whatever, in the contemplation of the legislation authorizing action, to bring the same forward and to support it with the submission of such data as was considered relevant. The Board also requisitioned the data and materials accumulated by the Harbour Commissioners during the many years in which from time to time this problem was under consideration; as well as the valuable records and data of the Public Works and Marine and Fisheries Departments at Ottawa.

"Immediately upon receiving the report, the Commissioners went into executive session to consider its findings and recommendations in detail. They were joined at their afternoon session, which extended far into the night, by the Minister of Marine and Fisheries. An adjourned joint sitting was held which occupied the greater part of Tuesday, at which were present, besides the three Commissioners and the Minister, the members of the Advisory Board of Engineers.

"The report of the Advisory Board is a very comprehensive document of substantial length and is accompanied by elaborate sets of maps and drawings for elucidating its contents. By process of elimination, for reasons in each instance which are fully discussed, the Engineers arrived at the conclusion that the Delorimier Avenue site was that altogether best adapted to serve the needs of the communities concerned and of the general public; while at the same time presenting no impediment to navigation and avoiding all possibility of injuriously affecting existing harbour works or of aggravating conditions of congestion complained of in certain of the older city areas."

Dr. McDougald further explained the action of the Commissioners as follows:

"Upon submission of the report and having made an intensive examination and study of its contents and having regard to the further noteworthy fact that its categorical findings and conclusions were unanimously arrived at by the

five members composing the Board of Advisory Engineers, my colleagues and myself reached the decision that it was our duty unanimously to adopt it. The problems presented to the Commissioners were not without difficulty, for, as individuals, they had during their three years of almost constant consideration of this matter necessarily acquired certain personal prepossessions with regard to location as well as other features.

"I am gratified to be able to say that my colleagues have authorized me to announce that we hold the view that our function of determining site in the terms of the enabling legislation might in some sense be regarded as a judicial function. Having assembled all of the testimony and having called in a body of technical experts of the highest standing and competency, and there remaining no fact or condition in our knowledge capable of negativing the value of their recommendation, it was our clear duty in the public interest to determine as we have done. Perhaps I should add that, aside from all other considerations which themselves alone would have sufficed to influence the Commissioners and the Advisory Board in favour of Delorimier Avenue site, they were bound to give high consideration to the reports of the technical officers of the Departments of Public Works and Marine and Fisheries on the all-important problems affecting currents, flow and ice-jams; these officers unequivocally condemning the adoption of any site less than some 900 feet east of Victoria Bridge."

TRADE AND TRANSPORTATION DEPARTMENT

In March, Mr Fennell proceeded to London to take up his duties as Director of Trade and Transportation in Great Britain and Continental Europe. No service of this sort had ever before been undertaken, so that the expedition was mainly a reconnoitering one and in the nature of a trial trip. Mr. Fennell's instructions required him to intimate his presence and the purpose of his mission in Great Britain to individuals, trade commissioners and associations, shipping interests and organizations concerned in overseas trade in the different marketing and shipping centres.

Perhaps the magnitude of the undertaking was not realized either by the Commissioners or by the Director, for these interests which it was sought to reach are multifarious in

number and infinite in their ramifications, extending in Great Britain alone to upwards of twenty-five individual ocean ports which have to do with overseas trade and a well-nigh limitless number of inland trade and manufacturing centres.

With characteristic and indefatigable energy Mr. Fennell addressed himself to the task. Within ten days of reaching London he had so far impressed the utility of his mission upon those with whom he was brought into contact that he was afforded opportunities of addressing the members of

MONTREAL HARBOUR, 1762

From original engraving by Thomas Jeffreys, from drawing by Thomas Patten

the Chamber of Shipping and of the Baltic Corn Exchange, who, in each instance, came out in large numbers to hear his exposition of the equipment and facilities of the Port of Montreal, and the safety and advantages afforded by the St. Lawrence River route for the exporter to America.

Similar meetings during the summer and autumn were held at Southampton, Hull, Bristol, Plymouth, Newport, Cardiff, Swansea, Leeds, Birmingham, Liverpool, Manchester,

Newcastle-on-Tyne, Sunderland, Sheffield, York, Coventry, Reading and Bradford; at Belfast, Limerick, Dublin, Cork, Waterford and Londonderry in Ireland; and at Edinburgh, Glasgow, Aberdeen, Leith, and Dundee in Scotland. Addresses were also delivered or conferences were held during the summer at meetings and conventions of important trade organizations assembled from all parts of the Kingdom.

Specially important amongst them were the meetings of the British Chambers of Commerce, composed of all the Executives and Secretaries of all the Chambers of England and Scotland, at which were in attendance the Rt. Hon. The President and Parliamentary Secretary of the Board of Trade and the officials of the Department of Overseas Trade; of the Joint Executive Councils of the Shipping Federation of Great Britain and the National Firemen's and Seamen's Union; of the United Federation of Linen Manufacturers of Ireland; of the British Channel Shipowners' Association at Cardiff, the President of which declared that never before had these shipowners had an opportunity of learning anything about the Port of Montreal and its grain-handling facilities; of the Confectioners', Bakers' and Allied Trades Exhibition and Convention; of the Jute Association at Dundee, and of the Corn Trade Associations and Chambers of Shipping at London, Liverpool, Hull and Glasgow as well as at many other ports.

Consequent upon the interest aroused by these formal meetings and the discussions which arose, it became necessary for the Director to pass several days, in many instances, in certain of these centres in individual conferences with members of leading commercial houses, ship and shipyard owners, coal operators, managers and officials of the great railway systems, manufacturers, grain importers, flour millers and port officials. A principal impression derived from these meetings and conferences was the comparative paucity of knowledge prevailing regarding the Port of Montreal, its commerce and the facilities which it and the St. Lawrence route offers to shippers into the interior of America. Notable was the avidity of inquirers and listeners everywhere and

manifest was the need of wide and concerted dissemination of even the most elementary particulars respecting the trade and commerce and the trade routes of the Dominion. The attitude everywhere was altogether receptive, and return visits of longer duration were urged upon the Director in almost every centre.

Very early in his campaign Mr. Fennell learned that the idea of a Department of Trade and Transportation and of publicity was not new in Great Britain. The keenest rivalry exists amongst the great ports, and intense competition is carried on to attract freight and cargoes to their docks and to apprise shippers of every variation in tolls and charges, and of even the slightest advantage of any one of them over the others in point of fluctuating rates or of any facility whatever. The ports of Manchester, Bristol, Southampton, Hull and Liverpool maintain offices in London which are highly organized for carrying out schemes of publicity and staffed with solicitors for canvassing the business of merchants, importers and exporters at its source. Liverpool also maintains offices at Sandford, near Leeds, and at Birmingham. The purpose of these organizations is primarily to provide shippers with immediate and exact information as to the cost of moving freight to any part of the world, together with comparisons of cost with any possible rival port.

Extensive schemes of publicity are carried out by all of them both through the mails and the newspaper press. This was notably in evidence at the Wembley Exhibition, where the ports of Liverpool, Glasgow, Manchester, Hull, Southampton and Bristol staged very elaborate exhibits, including what are described to be wonderful and realistic models of the ports, for the purpose of exemplifying the features and facilities of their respective harbours. Booths were maintained for distributing printed matter, and manned to afford all information asked for. Even the port of London maintained an exhibit with all publicity accessories at a cost, it is said, for the season of $80,000. Per contra, it should be noted that whereas the Canadian building is acknowledged to be the best in this class at Wembley, yet the advertising

material, for which there is an incessant demand amongst visitors, is comparatively negligible, especially as it relates to the Port of Montreal. The chief advertising item, which it was said had attained an immense circulation, was a pamphlet entitled "Canada of To-day," a Wembley Souvenir! Its chief feature consisted of portraits of celebrated Canadians. The Port of Montreal was dismissed with a cut depicting the low level quays and the old wooden sheds as they were about 1896!

The lesson enforced from these observations was that the managers of the great home ports do not feel themselves to be exempt from the necessity of a constant and unremitting appeal to the users of shipping facilities, not abroad only, but at home as well.

By far the larger number of British ports are under municipal or private corporate control. Their authorities are far from oblivious to the need of modernizing their facilities. Large programs are being laid down in almost every shipping centre visited, extending from a cost at Aberdeen of some $5,000,000 to about $70,000,000 at Tilbury, owned by the Port of London; and about $65,000,000 at Southampton, owned by the Southern Railway, which is therefore providing this sum. These improvements embrace every type of harbour development designed to attract the largest liners in the world, amongst them extensive dredging operations in harbour and tributary rivers; the provision of reinforced concrete docks and jetties equipped with double warehouses having the latest loading machinery; modern grain elevators; belt railway systems; and the erection of giant dry docks for accommodating the largest ships afloat. Important features of these programs will require years for their consummation, in many instances involving the scrapping of existing extensive plants which, under other conditions, enabled a large commerce to be developed.

The necessity for bringing down costs of forwarding merchandise to the irreducible minimum, and the need for greater celerity in moving and handling the huge tonnages of modern shipping are the impelling forces which dictate

these great undertakings. No less urgent also is the realization of the opportunity open to these South British ports for sharing in the overseas transhipping trade to Continental Europe developed on so vast a scale by such ports as Hamburg, Copenhagen, Rotterdam and Antwerp.

The magnitude of the outlays required for modernizing even the most important of British ports emphasizes the prescience of those who, at a relative bagatelle of cost, spread over several decades of time, have made the St. Lawrence route what it is to-day, and have placed the Canadian National port in a premier place amongst the great ocean ports of the world in point of facilities, equipment and safety.

Principal shipping centres in France, Holland, Belgium and Italy were also visited. The Director having been favoured with the sponsorship of the British Consular Service and with the active and aggressive support of Hon. Philippe Roy, Canadian Agent General in Paris; of Mr. Godfroi Langlois and Mr. Palmer, Canadian Trade Commissioners in Belgium and Holland respectively, important meetings were readily organized, embracing all the principal commercial, shipping and exporting and importing interests at Paris, Havre, Rouen, Amsterdam, Rotterdam, Brussels and Antwerp; and, at a later period, in Marseilles, Genoa, Milan and Rome. Comprehensive reports of these meetings appeared in the local newspapers, in some instances elaborately presenting the features and equipment of the St. Lawrence trade route, and particularly the character and extent of the Canadian export grain trade. So great was the interest aroused that in Rotterdam alone 14 meetings were addressed, all of them organized under the auspices of local trade, grain and milling, industrial or shipping associations, or other commercial bodies.

Interest was no less keen in the Mediterranean ports. Here, as elsewhere, the problem of the Director was not the securing of audience, but the allocation of the time at his disposal so as to enable response to be made to the demands upon him.

The major interest of the Continental ports in Canadian trade and shipping is concentrated in the import and movement of grain. A comprehensive survey was made of this whole position, and of the problems with which the importer in these countries is confronted. It was curious to find that though the interest in and demand for Canadian hard wheat is universal in the grain and milling trades, yet few importers have direct connections with the Canadian grain trade, nor do they receive direct offerings from Canadian grain exporters. Their purchases are almost uniformly c.i.f. their own ports and rarely are they aware of the ports whence shipped. On the other hand, it was found that importers uniformly preferred shipment of Canadian grain from Canadian ports with Canadian certificates. An illuminating example of the subterfuges under which spurious grades of wheat reach a very large but somewhat remote market, was discovered by the Director at Marseilles. A great deal of dissatisfaction was found to exist there concerning what is called "Gulf-Manitoba" wheat. Importers, not realizing the significance in the designation of the term "Gulf," which they understood to refer to the Gulf of St. Lawrence, and having purchased c.i.f. Marseilles, were disillusionized only upon arrival of cargoes ex Gulf of Mexico ports. The cargoes consisted of an illicit mixture of a small percentage of hard Canadian wheat with United States hard winter wheat.

An investigation of supreme interest to the Director, and which he took up with evident zest, was that relating to the equipment and the methods of receiving and handling grain cargoes at European ports. In a few ports in Great Britain modern grain elevator plants equipped for economical operation were found. The general average, however, is represented by methods inefficient and costly, and by equipment of the most primitive and obsolete type. The net result is that, in the Port of London, for example, the cost of handling grain from vessel to storage ranges up to 4½c to 5c per bus., as against a cost at Montreal for the corresponding service of 4/10c per bus. Usually in the few instances in which modern grain-handling facilities were found to exist, their successful

operation was largely nullified by the operations and apparent dominance of dockers' unions.

The conditions are not dissimilar in most of the Continental ports, though in a few equipment and operation were found to conform to the best Western standards; whilst in others, programmes were being laid down for modernizing their facilities.

All of this is of immediate interest to the Harbour of Montreal in its relation to the outturn of grain cargoes in European ports ex Montreal. At some of the ports visited there was found to be an accumulation of complaints in the grain trade respecting short outturn from "American" vessels, and in certain instances the Director was invited to examine them. Everywhere, upon investigation, it was found that the Montreal outturns uniformly checked out satisfactorily; whereas in the instances in which complaints had a basis in fact, they related to cargoes out of United States ports. Generally it may be set down as true that in both the British and Continental grain trades the Port of Montreal stands "ace high" (in the language of the Director) in respect to outturns from cargoes loaded from its elevators.

It was also ascertained that the Port of Montreal gives the best despatch to grain vessels of any port in the world. In the 1923 season, grain vessels loaded at Montreal earned despatch money in substantial sums from certain of the large French importers.

The labours of the Director in accumulating and collating data and information have created a problem of no small perplexity for the Commissioners. Manifestly there is a fertile field of vast extent heretofore untilled, which needs only cultivation to enable a large harvest to be garnered in the movement thence of tonnages over Canadian lines of transport, rail and water, which again would inevitably give great acceleration to the complementary movement of the productions of Canada overseas. But the cultivation must be intensive and the areas to be covered are large, the populations diverse and great. This implies the development

of an organization upon some considerable scale. Moreover, the service to be thus rendered would enure not merely to the advantage and profit of the St. Lawrence route and ports, but to the general trade of Canada. Here there would be in some degree an interlocking with the services now maintained by the Government of Canada and the two major Canadian railway systems.

Adequate time and earnest consideration will be given by the Commissioners to the consideration of the course which should be adopted in implementing the service inaugurated by the Director.

CHICAGO WATER DIVERSION

The Chicago Sanitary District water diversion or depredation, the story of which was set forth in some detail in last year's Annual Report, occupied front page newspaper space during the greater part of the year. Communities and shipping interests affected, as well as the Governments charged with protecting their rights, were thoroughly aroused from the lethargy of the last thirty years, so that great momentum was attained as well in the United States as in Canada in the opposition to the Chicago programme and designs.

A spirited debate took place in the Dominion Parliament which elicited assurances from the Government that Canadian interests had been fully safeguarded at every stage by the lodging of formal protests at Washington.

Every one of the States abutting upon the Great Lakes, excepting the State of Illinois, had in one form or another registered disapproval of the unlawful acts of the Sanitary District. Almost every great city of the Great Lakes region affirmatively recorded its opposition at one or other of the Congressional or Court hearings held at Washington during the year. Typical amongst these was the protest filed by the Inland Waterways Committee of the Board of Commerce of Detroit. Insisting that the business men of Chicago must

now require its Sanitary District to stop its buccaneering methods, it is pointed out that the ports of the Great Lakes have no intention of entering into an unholy alliance with the Sanitary District; that the whole of the Illinois valley and the Illinois Congressional delegation outside of the Chicago representatives are in accord in resisting the Sanitary District plans. It is further emphasized that the Sanitary District proposals with regard to the provision of regulating or compensating works are not tenable, inasmuch as the District exists under the Constitution of Illinois and has no legal status outside that jurisdiction. Compensating works, if built, would be constructed jointly by the United States and Canada primarily for the purpose of aiding navigation—of getting a maximum channel depth at a minimum cost—and not for the purpose of encouraging Chicago in following an obsolete method of sewage disposal. Moreover, it is urged that Canada would never consent to the construction of works built upon the theory that such construction would convey the perpetual right to the Sanitary District to take an unlimited or excessive amount of water from the Lakes. Likewise, it is insisted, neither would the State of Michigan consent to such a proposition, nor would Minnesota, Wisconsin, Ohio or New York. The Memorial proceeds:—

"Another point to consider is that every 1,000 cubic second feet diverted from the lakes at Chicago means 50,000 H.P. if developed at Niagara or in the St. Lawrence. How would the Sanitary District compensate for that, even if it had the means to do so? Besides that, the waters of the Great Lakes are not for sale. The Lake ports do not propose to be way stations on the Great Lakes to satisfy the insatiable greed of the Sanitary District."

The City Council of Detroit, reinforcing the Memorial of the Board of Commerce, makes the following pertinent answer, in a Resolution to the Sanitary District pretence that Canada was compensated for the Chicago diversion by the Niagara flow permitted under the Waterways Treaty of 1909:

"The claim set up by Chicago that the diversion of 10,000 second feet is justified in view of the fact that 53,000 second feet flow over the Niagara, is not sound. The waters which

flow into the Welland Canal and over the Niagara do not lower the lake levels. The flow is natural and waters remain in the system; while abstraction at Chicago is unnatural and conveys the waters into another system entirely, lowering the levels of the Great Lakes."

In December, the Supreme Court of the United States heard argument in the celebrated case of the United States against the Sanitary District for an injunction to restrain the diversion of an indefinite and increasingly large amount of water in defiance of legislation by Congress and of rulings by the Department of War. In the brief filed by Attorney-General Stone for the United States Government it is said that:—

"Six years were consumed in the taking of testimony; for six more the case was held under advisement by Judge Landis; for three years more the case was pending on the Sanitary District's motion for a modification of the terms of the decree for an injunction which Judge Landis indicated he would enter, but never did."

Subsequently the Supreme Court, having heard oral argument, handed down its decision in an opinion prepared by Associate Justice Holmes and read by Chief Justice Taft, decreeing that the injunction limiting the Sanitary District to a water flow of 4,167 cubic feet should become effective within sixty days.

The following extracts from the opinion of Justice Holmes, which discussed the issues in the case at great length, suggest the main considerations which moved the Court in ordering a decree sustaining the injunction against the Sanitary District:

"Probably the dangers to which the City of Chicago would be subjected if the decree is carried out are exaggerated, but in any event we are not at liberty to consider them here as against the edict of a paramount power, viz., the power of the Federal Government.

"The United States is asserting its sovereign power to regulate commerce and to control the navigable waters within its jurisdiction. It has a standing in this suit not only to remove obstruction to interstate and foreign commerce, the main ground, but also to carry out treaty obligations to a foreign power bordering upon some of the lakes concerned,

and it may be also, on the footing of an ultimate sovereign interest in the lakes."

"The main ground is the authority of the United States to remove obstructions to interstate and foreign commerce. There is no question that this power is superior to that of the states to provide for the welfare or necessities of their inhabitants. Evidence is sufficient, if evidence be necessary, to show that a withdrawal of water on the scale directed by the statute of Illinois threatens and will affect the level of the lakes, and that it is a matter which cannot be done without the consent of the United States even were there no international covenant in the case."

"The withdrawal, such as has been in progress, is prohibited by Congress except so far as it may be authorized by the Secretary of War."

"The decree therefore stipulated that it would be 'without prejudice to any permit that may be issued by the Secretary of War in accordance with law'."

Following this important decision and finding of the Supreme Court, application was made by the Sanitary District to Secretary of War Weeks, who ruled that diversion for the present should be limited to 8,500 c.f.p.s. and that it should be reduced to 4,167 feet by 1935. The permit will allow an average of 8,500 feet until December 31, 1929, conditional upon no unreasonable interference with navigation; the carrying out of a program of sewage treatment by artificial processes before the expiry of the permit; the payment by the Sanitary District of its share of the cost of regulating or compensating work to restore the levels of the Great Lakes, plans for the same to be sanctioned by the appropriate authority acting for the two Governments.

SHIPPING

The Report of the Harbour Master for the year 1924, at the end of this volume, indicates a striking increase in the shipping of the Port, both as to numbers and tonnages of ships. The figures established in 1922 were passed by a considerable margin, and the result was the setting up of new

records for the Port. An analysis of the statistical statement shows that 988 trans-Atlantic vessels with a net registered tonnage of 3,597,147 tons, together with 235 coasting ships having a tonnage of 499,185 net registered tons, came to the Port during the season of navigation, or an increase of 13% over the previous year. The inland vessels in 1924 numbered 5,791, which was 198 more than in 1923, but of even greater interest in this connection was the increase in the tonnage of from 8,195,308 net registered tons to 11,215,764 net registered tons, due to the number of new and bigger ships constructed in the last year or so for the Port Colborne to Montreal route.

Navigation opened on 18th April, and the first sea-going vessel arrived in Port on the 24th April, while the last departure for sea occurred on 3rd December. The greatest number of sea-going vessels in Port at one time was 80, which occurred on 4th November, and on 17th June there were 43 lake vessels lying at the wharves or under the marine legs at the elevators. Ships representing seventeen nationalities were to be seen in the Port during the season, of which 898 vessels of a net registered tonnage of 3,192,437 were of British registry. The following countries were represented: Norway 99 vessels, Italy 71, Holland 33, Greece 30, United States 25, Denmark 24, France 15, Sweden 6, Danzig 6, Spain 5, Belgium 3, Germany 3, Latvia 2, and Hungary, Finland and San Domingo one vessel each.

A most striking instance of the celerity with which vessels can be loaded at the Port of Montreal was furnished on the 9th July, when the steamer "Innerton" took on board her complete cargo of 274,590 bushels of grain in exactly 6¼ hours. Such instances are rare enough to cause comment, but the more remarkable fact that the Port at all times maintains facilities sufficient to continue such performances during the whole season, if necessary, is not sufficiently appreciated. Such, however, is the case, and if each vessel coming to take grain were fitted out and ready to load, and if her grain was all in the Elevators ready to be loaded, the feat accomplished by the "Innerton" would be so commonplace as to pass without special mention.

An interesting development during 1924 was the inauguration of a new line to the Port, running freight services direct to Italy, operated by the Lloyd Mediteranneo Company. This venture was so successful that it is the intention of the owners to increase their sailings materially during the year 1925. Commerce between Newfoundland and the Port of Montreal showed renewed activity also, and while the sailings in 1924 were more or less of an experiment, their success is shown in the fact that several new ships are being built, and will be placed on this run by the Murray Transport

Typical Scene in the Harbour During the Navigation Season

Company of Newfoundland during the next season of navigation.

A new departure in the Port's history was set by the arrival of five vessels from Argentine loaded with corn for import into Canada. In spite of the fact that the marine legs at the elevators were constructed to unload grain primarily from lake vessels, with their low bare decks, the unloading of these tramp steamers was successfully taken care of, and each of the vessels which came into Port so loaded with Argentine grain

HARBOUR COMMISSIONERS OF MONTREAL

Statement of Income and Expenditure for the Year Ended 31st December, 1924

ITEMS	TOTALS	GRAND TOTALS
INCOME ON REVENUE ACCOUNT		
Grain Elevator System	$2,067,155.30	
Railway Traffic Department	506,769 89	
Storage Warehouse	270,933.65	
Float. Harbour Equipment — Rent. Lot Sheds, Hoists, etc.	[illegible]	
Wharfage Rates	956,789.32	
Rental of Harbour Spaces, etc.	[illegible]	
Sundry Receipts on Revenue Account	[illegible]	
Total Income on Revenue Account		[illegible] 25
RECEIPTS ON CAPITAL ACCOUNT		
Dominion Government Advances on Loan under Act 12-13, George V., Chap. 33..	$2,960,000 00	
" " 13-14, " " 59..	[illegible]	
		4,925,000 00
Grand Total Receipts		$9,307,115 25
Outstanding Accounts, etc., Dec. 31st, 1924	$1,166,986 79	
Bank of Montreal, overdraft, Dec. 31st, 1924.	159,253 42	
Interest Accrued on Government Debentures, July 1st to Dec. 31st, and on Elevator "B"..	879,822.69	
Sinking Fund Reserve at 31st Dec. 1924 . . . $328,330 00		
Add Reserve from Revenue 1924 . . . 342,900 00		
Total Reserve Sinking Fund end of 1924	671,230 00	
Total Outstanding at 31st December, 1924	$2,877,292 90	
Total Outstanding at 31st December, 1923	[illegible]	
Balance of Outstanding to deduct		574,444 30
		$8,732,670 95

ITEMS		TOTALS	GRAND TOTALS
EXPENDITURE ON REVENUE ACCOUNT			
Grain Elevator System Operation and Maintenance	$858,509 69		
Railway Traffic, Operation and Maintenance	[illegible]		
Storage Warehouse, Operation and Maintenance	175,351 26		
Harbour Equipment, Operation and Maintenance	66,695 43		
(The above do not include, Interest, Sinking Fund, Depreciation, Administration, etc.)			
Miscellaneous and General Expenses	348,453 84		
Police Service on Wharves	59,851 76		
Sundry Disbursements on Revenue Account	135,067.39		
Reserve Accounts for Depreciation, Renewals, etc.	200,000 00		
Total Operation, Maintenance, etc.		$2,349,35[illegible] 14	
Interest on Debentures and on Elevator "B"	1,548,255 96		
Sinking Fund Reserve, for Retiring Debentures	342,900 00		
		1,891,155 96	
Total Expenditure on Revenue Account			$4,240,508 10
EXPENDITURE ON CAPITAL ACCOUNT			
Elevator System —			
Grain Elevator No. 3, Conveyors and Marine Tower Jetty	$2,025,829 92		
Grain Elevator "B," Extension and Power House	[illegible]		
Total—Grain Elevator System		[illegible]	
Wharves, Piers and Basins:—			
High Level Wharves, Sections 30 to 35	$302,501 35		
Bickerdike Pier, Dredging Approach and Basin	202,673 57		
High Level Wharves, Sections 38 to 40	185,050 83		
Windmill Point Wharf, Reconstruction	[illegible]		
Windmill Point Wharf, Dredging Basin	28,570 25		
Paving Roadways and Ramp at Sections 24 to 27	26,032 40		
Water Pipes and Drains at various sections	9,048 74		
Windmill Point, Embankment Filling	3,662 35		
Paving at Bickerdike Pier and Windmill Point Wharf	1,883 30		
Alexandra Pier Extension	766.64		
King Edward Pier Extension	763.35		
Jacques Cartier Pier Extension	317.16		
Total—Wharves, Piers and Basins		832,186.49	
Railways and Electrification:			
Electrification of Railways and Equipment	$338,219 30		
Railway Tracks, McGill Street to Victoria Pier	[illegible]		
Railway Tracks, Victoria Pier to Pointe aux Trembles	[illegible]		
Railway Tracks, Elevator No. 3 Site	[illegible]		
Total Railway Tracks and Electrification		[illegible]	
Permanent Sheds and Sawmill:—			
New Permanent Sheds, Section 26 and 27	$180,662.28		
Sawmill and Shed Bickerdike Pier	3,609 65		
Sheds 17, 18 and 19, Victoria Pier (Completion)	[illegible]		
Total Permanent Sheds and Sawmill		[illegible]	
Cold Storage Warehouse:			
Additional Refrigeration	[illegible]		
Additional Freight Hoists	11,253 10		
Additional Handling Equipment	6,314 95		
Total Cold Storage Warehouse		139,449 18	
New Plant, Shops, etc.			
New Flat Deck Scows	$49,312 46		
New Machine Shop Extension Harbour Yard	[illegible]		
Electrical Equipment, Harbour Yard Shops	[illegible]		
Alterations in Round House, Harbour Yard Shops	[illegible]		
Total—New Plant and Shops		106,950 99	
Electric System on Wharves:—			
SubstationNo. 7 at Harbour Yard	$53,034 10		
Transmission Lines, Sections 12 to 20	17,138 98		
Electric Lighting System on Wharves and Piers	[illegible]		
Substation Bickerdike Pier	[illegible]		
Transmission Line Bickerdike Pier	118 30		
Total—Electric System		[illegible]	
South Shore Bridge:—			
Preliminary Surveys, etc (Government Authorizations)	[illegible]		
Engineering Services, Borings, etc. (New Work)	[illegible]		
Total—South Shore Bridge		67,611 56	
Altering Lower End of Guard Pier	$780 00		
Real Estate, Sundry Balances	468 87		
Total—General Items		1,248 87	
Total Expenditure on Capital Account			[illegible]
Grand Total Expenditure, Year 1924			$8,669,511 43
Balance at 31st December, 1924			
Accounts Receivable, etc.	[illegible]		
Material in Stock	[illegible]		
Cash on Hand	5,320 00		
Total Balance on Hand at 31st December, 1924.		$955,785.24	
Balance at 31st December, 1923		[illegible]	
Difference in Balance, to add			[illegible]
			[illegible]

Certified,
GEORGE E. SMART, Comptroller.
Montreal, Que., 30th April, 1925

Verified:
RIDDELL, STEAD, GRAHAM & HUTCHISON, C.A.,
Auditors

Certified
[illegible], Secretary.

sailed out in due course equally fully laden with Canadian grain for the European market.

Another item worthy of mention was the inauguration of importing Swedish "sulphite pulp," or chemically treated pulpwood, through the Port of Montreal. Some 5,000 tons were brought in during the season, and this business was handled very economically and effectively from the ocean steamers into lake vessels for interior shipment. It is anticipated that future years will see this business grow to quite considerable proportions.

FINANCIAL

The Statement of Income and Expenditure for the year 1924, hereto annexed, shows Income on Revenue Account of $4,382,115.25, an increase of $660,955.26 from the previous year, mainly due to the increased income from the Grain Elevator System, the Railway Traffic Department, the Cold Storage Warehouse and Customs Wharfages.

The cost of Operation, Maintenance, Interest, Sinking Fund, etc., was $4,240,508.10, an increase of $610,183.24, leaving a surplus to the credit of Revenue Account for the year of $141,607.15. The Interest Charges, which amounted to $1,548,255.96, show an increase of $268,293.87 on new loans, due to the continued carrying out of works of improvement.

The balance at the end of 1923 in the Sinking Fund Account was $328,330.00, to which was added in 1924 the sum of $342,900.00, making a total of $671,230.00, to provide for retiring debentures of the Dominion Government as they mature.

At December 31st, 1924, the total Debentures outstanding amounted to $39,215,000.00, all of which are held by the Dominion Government.

The Expenditures on Capital Account during the year were as follows:—

Grain Elevator System	$2,403,093.18
Wharves, Piers and Basins	832,186.49
Railways and Electrification	613,429.64
Permanent Sheds and Sawmill	187,354.84
Cold Storage Warehouse	139,449.18
New Plant and Shops	106,950.99
Electric System on Wharves and Piers	77,678.58
South Shore Bridge, Surveys, etc.	67,611.56
Harbour Dredging, etc.	780.00
Real Estate	468.87
Total Expenditure on Capital Account, 1924	$4,429,003.33

TRADE OF THE PORT

The commerce of the Port has again shown heavy increases in most commodities. The fact that the number of bushels of grain handled was ten millions greater than the previous highest record should not overshadow the fact that the Port of Montreal does a tremendous trade in other commodities. Comparing the commerce of 1924 with that of 1923, there were decreases in the tonnage exported of automobiles and parts, cheese, eggs, flour, cured meats, liquors. Notable increases were shown in the export of butter, cement, machinery, refined sugar. Increases are noted in the import of books, boots and shoes, chinaware, British anthracite coal, cocoa beans, dry goods, paper, whiting, gasoline, crude oil, salt, steel, raw sugar, sulphur, tea, woodpulp, yarns. Decreases show in the import of chemicals, galvanized iron sheets, glass, liquors, creosote oil, phosphates.

A statement follows of the tonnage of all commodities handled. It will be noticed from the tonnage of local shipments that the Harbour of Montreal is ever playing a larger part in the handling of local commerce in the city.

The tonnage of grain is ommited from the appended table, it being the intention to deal elsewhere with the phenomenal record made in 1924 in grain shipments.

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Acetic Acid	...	7,587	...	7,587
Acids, various	360	371	...	731
Adding Machines	1	9	...	10
Advertising Matter	281	248	...	529
Aeroplane Parts	136	3	33	172
Agricultural Implements	30	11,572	...	11,602
Alabastine	...	...	15	15
Alcohol, Industrial	1	747	499	1,247
Alum	164	...	...	164
Alumino Ferric	167	...	...	167
Aluminum Ingots	73	554	...	627
Aluminum Scrap	135	48	...	183
Aluminum Sheets	113	142	...	255
Ammonia	27	46	94	167
Ammunition	12	150	...	162
Anchors	54	...	...	54
Angles	2,692	55	307	3,054
Artist's Materials	257	17	...	274
Asbestos, Crude	...	4,773	164	4,937
Asbestos, Mfrs. of	68	38	200	306
Asphalt	4	8	12	24
Automobiles	425	48,621	5	49,051
Automobile Parts	78	34,944	...	35,022
Babbit Metal	...	11	...	11
Baby Carriages	25	5	...	30
Bags and Bagging, Jute	203	2,242	378	2,823
Bags, Paper	38	251	...	289
Baking Powder	...	...	397	397
Ball Bearings	204	6	17	227
Barley, Pot and Pearl	4	...	...	4
Barrels, Empty	526	442	47	1,015
Basic Slag	110	...	...	110
Basketware	715	34	...	749
Baths	13	25	164	202
Batteries, Dry	1	24	...	25
Beads, Glass	26	...	...	26
Beans	46	...	263	309
Bedding	9	712	88	809
Beers	199	472	389	1,060
Bells	103	...	...	103

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Belting	26	92	36	154
Bicycles and Parts	46	200	127	373
Biscuits	489	155	534	1,178
Black Lead	99	...	...	99
Blanc Fixe	38	...	...	38
Bleaching Powder	187	...	...	187
Blocks, Maple	...	59	...	59
Blue, Washing	16	...	...	16
Boats	318	98	27	443
Boilers	3	420	152	575
Bones	4	17	...	21
Books	2,424	355	...	2,779
Boots and Shoes	1,123	...	...	1,123
Borax	8	...	...	8
Bottles, Empty	469	845	431	1,745
Bottles, Thermos	166	121	...	287
Bottle Wrappers, Paper	...	153	...	153
Boxes, Empty	35	62	1,722	1,819
Boxes, Paper	9	5	30	44
Bran	...	5,881	176	6,057
Brass Bars	101	...	...	101
" Mfrs. of	215	154	...	369
" Scrap	16	555	72	643
" Sheets	24	...	...	24
Brattice Cloth	14	...	...	14
Brick, Acid Proof	58	...	...	58
" Bath	35	...	...	35
" Building	...	778	...	778
Bricks, Glazed	1	...	...	1
" Terra Cotta	...	...	3,404	3,404
Bristles	7	...	...	7
Bristol Boards	10	...	...	10
Bronze Ingots	1	...	...	1
" Mfrs. of	29	...	...	29
" Powder	10	143	...	153
Brooms and Brushes	93	173	11	277
Broom Corn	...	...	164	164
Bullion	...	277	...	277
Burlaps	1,024	...	...	1,024
Butter	...	7,618	14	7,632
" Peanut	...	...	27	27
Buttons	60	4	...	64
Calcium Chloride	431	...	...	431

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Candles	8	38	...	46
Canned Goods, various	158	...	126	284
Canvas	87	46	1	134
Capsules	356	41	...	397
Carbide	...	1,004	48	1,052
Carbon Paper	...	40	...	40
Carbons	9	...	...	9
Carborundum Sand	...	1,281	...	1,281
Cardboard	117	1,320	...	1,437
Carpets	1,262	87	...	1,349
Casings, Sausage	62	739	...	801
Castings	421	191	399	1,011
Catsup	...	831	..	831
Celluloid, Raw	13	...	...	13
" Mfrs. of	202	...	...	202
Cement, Building	941	11,809	32,128	44,878
" Roofing	...	29	...	29
" Waterproofing	16	.....	...	16
Cereals	833	1,818	800	3,451
Chains	593	319	5	917
Chain Blocks	104	65	..	169
Chalk, Precipitated	50	...	..	50
Charcoal	...	...	177	177
Cheese	311	52,408	1,678	54,397
Cheese Coloring	16	...	...	16
Chemicals	4,008	3,188	222	7,418
Chicory	118	9	...	127
Chimneys, Lamp	...	263	...	263
Chinaware	5,385	22	...	5,407
Church Ornaments	250	1	...	251
Churns	...	85	...	85
Cigars and Cigarettes	70	13	...	83
Cinders	...	...	120	120
Clay, Ball	270	...	...	270
" Burnt	17	...	...	17
" China	3,775	...	...	3,775
" Fire	327	15	28	370
" " Mfrs. of	69	...	...	69
Clocks	196	8	...	204
Coal, Anthracite (Amer.)	5,613	...	16,527	22,140
" " (Brit.)	219,327	...	...	219,327
" Bituminous (Amer.)	169,865	...	...	169,865
" " (Brit.)	165	...	...	165

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Coal, Bituminous (Can.)	...	...	1,422,198	1,422,198
Cobalt Ore	...	390	...	390
Cocoa Beans	3,244	...	...	3,244
" Butter	708	1	...	709
" Nut	879	...	...	879
Coffee	611	2	27	640
" Essence	60	...	...	60
Coke	...	...	1,368	1,368
Confectionery	1,151	635	...	1,786
Copperas	122	...	...	122
Copper Bars	...	9,934	...	9,934
" Matte	...	12,958	...	12,958
" Mfrs. of	35	23	...	58
" Scrap	19	44	...	63
" Sheets	65	25	...	90
Copra	150	...	...	150
Cordage	103	55	...	158
Corks	40	25	3	68
Corkwood	2,757	...	...	2,757
Cotton, Raw	18	160	31	209
Cotton Waste	200	288	...	488
Cream Separators	332	11	...	343
Cream of Tartar	179	...	...	179
Creosote	...	...	8,333	8,333
Crucibles	69	16	...	85
Cutlery	255	1	..	256
Degras	55	...	...	55
Dextrine	132	...	...	132
Disinfectants	89	43	...	132
Doors	...	393	72	465
Dowels	...	81	...	81
Drugs	1,510	712	16	2,238
Drums, Empty	912	120	374	1,406
Dry Colors	5,508	266	...	5,774
Dry Goods	42,881	2,667	...	45,548
Dyes	518	61	...	579
Earthenware	9,080	348	14	9,442
Earthen Drain Pipes	398	137	...	535
Ebonite	5	...	...	5
Effects, Settlers	2,266	1,791	3	4,060
Eggs	...	5,771	1,076	6,847
Egg Fillers	...	84	...	84
Egg Yolks	127	...	...	127

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Electrical Apparatus	633	1,208	71	1,912
Electrodes	447	...	...	447
Epsom Salts	1,268	1	13	1,282
Essences	3	2	...	5
Fancy Goods	162	...	...	162
Feathers	17	26	...	43
Feed, Cattle	92	3,915	...	4,008
Feldspar	7	44	...	51
Felt	49	79	242	370
Felt, Paper Makers'	2	102	...	104
Fencing, Wire	...	946	...	946
Ferro Manganese	9,525	...	...	9,525
Fertilizer	106	6	59	171
Fire Arms	175	...	...	175
" Brick	6,476	585	698	7,759
" Sand	...	45	...	45
Fish, Cured	1,301	2,159	...	3,460
" Fresh or Frozen	11	759	95	865
" in Tins	1,901	1,339	1,446	4,686
Fishing Apparatus	163	...	...	163
Flax Seed	6,055	...	770	6,825
Flax, Tow or Fibre	114	432	...	546
Flooring, Hardwood	...	864	...	864
Flour	...	302,003	1,125	303,128
" Potato	975	...	...	975
Fly Catchers	66	...	...	66
Fruits, Dried	3,260	205	316	3,781
" Green	14,944	14,355	1,523	30,822
Fruit Jars	6	1,190	...	1,196
" Juices	221	945	...	1,166
" Pulp	58	...	...	58
" Salts	164	...	...	164
" in Tins	475	1,588	481	2,544
Fullers Earth	680	...	...	680
Furniture	2,094	2,524	71	4,689
Furs	111	244	...	355
Fur Waste	13	16	...	29
Galvanized Iron Sheets	15,646	21	503	16,170
Ganister	51	...	...	51
Gas Black	...	53	...	53

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Gasoline	18,282	570	19,594	38,446
Gears	...	...	510	510
Gelatine	146	3	...	149
Ginger	63	...	...	63
Glass Bulbs	1,610	...	...	1,610
" Cut	51	66	...	117
" Plate	5,823	12	...	5,835
Glassware	4,371	470	104	4,945
Glass, Window	12,640	10	24	12,674
Glauber Salts	324	...	...	324
Glue	623	18	187	828
Glycerine	898	5	...	903
Gramophone Records	2	5	...	7
Granite	1,584	4	...	1,588
Graphite	...	318	14	332
Grease	113	663	...	776
Grindstones	1,430	203	2	1,635
Groceries	995	550	66	1,611
Gypsum	99	195	8,269	8,563
Hair	33	1,007	...	1,040
Handles	4	412	...	416
Hardware	1,739	1,897	72	3,708
Hatters' Fur	130	...	...	130
Hay	...	...	20,139	20,139
Hides	98	629	...	727
Hollow-ware	1,131	299	3,142	4,572
Honey	5	345	11	361
Hoops, Steel	650	23	...	673
Hops	96	819	179	1,094
Horse Shoes	...	181	...	181
Inks	147	120	...	267
Insect Powder	1	50	...	51
Instruments, Musical	845	2,216	3	3,064
" various	153	74	...	227
Insulators	53	55	...	108
Iron Bars and Plates	7,037	413	1,531	8,981
" Mfrs. of	145	684	...	829
" Pig	2,987	...	...	2,987
" Pipes	4,291	6,753	339	11,383

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Iron Sand	45	...	...	45
" and Steel Scrap	2,353	52	4,637	7,042
" Skelps	1,815	1,141	...	2,956
" Wrought	74	...	...	74
Jewellery	50	1	...	51
Jute Cloth	2,712	...	...	2,712
Kauri Gum	132	...	...	132
Lamp Black	9	...	...	9
Lamps and Lanterns	31	361	...	392
Lamp Shades	11	261	...	272
Lard	34	37,265	878	38,177
Lead Battery Plates	939	...	...	939
Lead, Mfrs. of	49	...	...	49
" Pig	...	19	...	19
" Pipes	...	77	...	77
" Scrap	...	54	...	54
" Sheet	...	163	...	163
Leather Board	...	365	...	365
" in Bundles	255	1,604	...	1,859
" Goods	344	310	...	654
" Scrap	1	6	...	7
Leaves, Dried	6	...	...	6
Lentils	27	...	...	27
Life Buoys	8	...	...	8
Lime	48	79	1,358	1,485
" Chloride of	131	...	...	131
Linoleum	525	206	...	731
Linseed	3,361	...	1,617	4,978
Liquors	7,535	3,393	...	10,928
Litharge	157	...	...	157
Lithopone	2,403	...	...	2,403
Locomotives	240	...	291	531
Lye	...	...	13	13
Macaroni	156	85	...	241
Machinery	8,854	7,537	4,768	21,159
Machines, Sewing	42	1,193	...	1,235
Magnesite	...	89	...	89
Malt	25	1,503	...	1,528
" Extract	54	...	...	54
Manure	...	...	63	63
Maple Squares	...	330	...	330
Marble Chips	44	...	...	44

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Marble	2,115	50	...	2,165
Marine Shells	12	...	...	12
Match Splints	...	2,478	...	2,478
Matches	207	118	...	325
Meals	8	9,898	...	9,906
Meat, Cured	8	102,444	303	102,755
" Extract	121	...	...	121
" Fresh or Frozen	...	3,970	1,783	5,753
" in Tins	378	1,895	4	2,277
Medicines	356	71	...	427
Metal Doors	...	...	30	30
Meters	26	35	...	61
Mica	3	10	...	13
Milk, in Tins	48	12,202	...	12,250
" Powder	14	506	40	560
Mill Board	8	...	...	8
" Scale	...	...	92	92
Millinery	1,726	43	...	1,779
Mineral Waters	2,248	18	...	2,266
Molasses	13,627	...	417	14,044
Moss	16	...	...	16
Motor Cycles	50	28	...	78
Mustard	336	...	...	336
" Seed	162	...	...	162
Nail Dross	...	32	...	32
Nails	24	1,759	366	2,149
Naphthaline	189	10	...	199
Nickle Ingots	...	90	...	90
" Oxide	...	3,749	...	3,749
" Shot	...	547	...	547
Nicotine	6	...	...	6
Nitrate of Ammonia	1,255	...	...	1,255
" of Soda	1,845	...	...	1,845
Notions	150	74	...	224
Nuts and Bolts	6	669	15	690
Nuts, Edible	2,896	1	30	2,927
Nutmegs	27	...	...	27
Oat Feed	...	6,245	...	6,245
Oats, rolled	...	20,451	133	20,584
Oil, Castor	480	...	...	480
" Cocoanut	201	...	...	201
" Cod	358	...	...	358
" Colza	18	...	...	18

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Oil, Corn	...	18	...	18
" Creosote	13,489	...	...	13,489
" Crude	410,995	1,374	144,544	556,913
Oils, Essential	58	...	...	58
Oil, Lard	...	3	26	29
" Linseed	114	192	283	589
Oilmans' Stores	539	13	...	552
Oil Meal	...	6,197	1,367	7,564
" Oleo	7	1,101	...	1,108
" Olive	629	...	...	629
" Palm	122	...	...	122
" Refined	176	1,227	...	1,403
" Seal	154	...	...	154
Ores, various	...	85	...	85
Oxide, Cobalt	...	30	...	30
Paints	237	2,208	469	2,914
Paper Board	...	1,499	...	1,499
Phosphorus	...	1,328	...	1,328
Photo Sundries	48	705	...	753
Pickles	467	71	...	538
Pictures and Frames	136	17	...	153
Pimento	69	...	...	69
Pipes, Tobacco	543	4	...	547
Pitch	46	585	25	656
Plaster	...	1,300	958	2,258
Plasticine	19	...	...	19
Plumbago	11	1	...	12
Plywood	38	...	...	38
Poles, Cedar	52	...	...	52
Polishes	352	35	...	387
Potashes	608	2	...	610
Poultry	...	...	297	297
" Feed	...	315	...	315
Preserves	592	...	...	592
Printed Matter	11	14	...	25
Propeller Blades	...	...	4	4
Pulp Board	1	1,155	...	1,156
Pumice Stone	47	...	...	47
Putty	120	17	...	137
Quarries	884	...	...	884
Quicksilver	13	...	...	13
Rabbit Skins	55	...	...	55
Radiators	...	65	...	65

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Rags	3,395	1,122	1,708	6,225
Rails, Scrap	...	1	4,544	4,545
" Steel	40	1,246	2,132	3,418
Railway Material	...	...	26	26
Razors and Parts	1	15	...	16
Paper, Mfrs. of	1,668	660	57	2,385
" Printing	1,182	6,590	...	7,772
" Roofing	1	925	50	976
" Stock	1,850	...	1,266	3,116
" Wall	141	1,382	...	1,523
" Wrapping	1,238	8,875	2	10,115
Paris Green	18	38	...	56
Peas	110	8	240	358
Peels	363	...	...	363
Pigwood	...	428	...	428
Pepper	41	...	...	41
Perfumery	387	...	...	387
Phosphate	8,091	48	...	8,139
Reels, Cable	22	...	...	22
Refining Earth	...	...	86	86
Resin	11	...	...	11
Rice	2,366	548	...	2,914
" Unhulled	1,591	...	...	1,591
" Flour	...	45	...	45
" Meal	...	146	...	146
Rivets	25	268	...	293
Rope	556	...	390	946
" Scrap	277	...	16	293
Roots	60	56	...	116
Rubber, Crude	1,637	...	...	1,637
" Mfrs. of	219	8,345	...	8,564
" Shoddy	2	...	...	2
" Substitutes	23	...	...	23
Saddlery	252	...	...	252
Sal Ammoniac	297	39	...	336
Salt, Coarse	22,817	1	910	23,728
" Fine	80	1,728	4,036	5,844
Saltpetre	53	...	...	53
Sand	20,581	...	25,146	45,727
Sauces	434	25	...	459
Sausages	...	13	...	13
Scales	...	204	20	224
Scoria Blocks	312	...	127	439

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Screws	...	24	...	24
Seed	831	2,709	...	3,540
Sheep Skins	98	...	...	98
Shingles	...	540	63	603
Ship Stores	...	7,761	...	7,761
Shoddy	4	...	...	4
Shoe Counters	...	90	...	90
Shooks	...	1,902	623	2,525
Shortening	...	186	...	186
Shorts	...	5,986	85	6,071
Shrubs	3,660	5	...	3,665
Silver Ore	...	149	...	149
Silverware	55	...	...	55
Sisal	1,891	...	...	1,891
Skewers	...	47	...	47
Slate	70	41	31	142
Sluice Gates	...	...	73	73
Smoke Stacks	...	...	16	16
Soap, Common	806	262	...	1,068
" Castile	173	...	...	173
Soapstone	299	143	...	442
Soap, Toilet	85	1,398	139	1,622
Soda	...	71	...	71
" Ash	58	...	128	186
" Bicarbonate	...	...	141	141
" Caustic	330	143	...	473
" Silicate	221	...	69	290
Soup, in Tins	...	19	...	19
Spools	1	6	...	7
Spool Wood	...	210	...	210
Sporting Goods	184	61	39	284
Spices	201	4	...	205
Spikes	...	...	196	196
Starch	313	257	76	646
Stationery	605	266	2	873
Statuary	190	1	...	191
Stearine	5	...	...	5
Steel Bars	6,418	48	4,504	10,970
" Billets and Blooms	6,025	...	3,429	9,954
" Mfrs. of	223	461	126	810
" Plates	4,343	337	1,872	6,552
" Rods	...	...	848	848
" Sheets	8,851	319	19	9,189

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Steel Structural	3,824	412	8,809	13,045
" Tanks	...	...	324	324
" Tyres	3,252	...	...	3,252
Stone, Building	143	...	...	143
" Unmanufactured	3,896	110	21,579	25,585
Stoneware	66	10	140	216
Stoves	71	49	933	1,053
Straw	...	...	23	23
Strawboard	64	13	...	77
Straw Covers	177	...	...	177
Stucco	...	37	...	37
Sugar, Maple	...	7	...	7
" Raw	92,081	...	41,874	133,955
" Refined	128	804	52,269	53,201
Sulphate of Copper	211	...	...	211
Sulphur	18,898	12	...	18,910
Sundries	718	3,484	298	4,500
Syrups	380	641	...	1,021
Syrup, Corn	7	227	38	272
" Glucose	...	...	21	21
" Maple	...	54	...	54
Talc	125	430	...	555
Tallow	51	3	...	54
Tanners' Extract	302	6	...	308
Tapioca	197	...	14	211
Tar	...	161	53	214
Tarvia	...	56	...	56
Tea	7,705	113	169	7,987
Teazels	21	...	...	21
Thread	764	39	34	837
Tiles	951	42	...	993
Tins, Empty	...	7	63	70
Tin Foil	53	...	...	53
" Ingots	2,209	1	...	2,210
" Plates	13,444	1	153	13,598
" Scrap	...	1,451	...	1,451
Tobacco, Leaf	49	1,020	...	1,069
" Mfrs. of	245	32	...	277
" Stems	...	37	...	37
" Sundries	498	22	...	520
Toilet Articles	302	469	...	771
Tools	140	189	...	329
Tortoise Shell	7	...	...	7

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Toys	12,668	239	...	12,907
Traction Engines	...	850	...	850
Tractors	...	1,085	10	1,095
Trunks	...	150	9	159
Turpentine	2	6	...	8
Twine	1,794	985	12	2,791
Typewriters	...	8	...	8
Umbrellas	...	14	...	14
Valves	36	202	...	238
Varnishes	97	32	...	129
Vegetables, Raw	3,604	1,416	12,112	17,132
" in Tins	1,550	2,565	826	4,941
Vinegar, in Bulk	250	152	...	402
" in Glass	123	...	...	123
Wagons	6	56	14	76
Wallboard	...	2,258	23	2,281
Washers	...	...	46	46
Washing Machines	...	...	33	33
Wax	70	...	...	70
Webbing	24	...	...	24
Wheel Barrows	...	...	12	12
Wheels	199	771	134	1,104
Whiting	9,996	1	21	10,018
Wild Animals	...	...	40	40
Window Frames	217	3	66	286
" Shades	...	18	...	18
Wine	4,076	46	...	4,122
Wire, Aluminum	...	653	...	653
" Barbed	31	428	...	459
" Bronze	44	2	...	46
" Cable	25	388	...	413
" Cloth	23	2	...	25
" Copper	75	66	...	141
" Mfrs. of	240	...	...	240
" Netting	623	...	...	623
" Rods	8,095	56	1,904	10,055
" Rope	125	129	113	367
" Scrap	...	16	...	16
" Steel, in coils	1,961	4,988	135	7,084
Woodenware	621	634	13	1,268
Wood Blocks	10	...	...	10
Woodpulp	29,006	2,176	21	31,203
Wood Shanks	...	77	...	77

COMMODITY	Import Tons	Export Tons	Local Tons	Total Tons
Wool, Cotton	3	...	...	3
" Grease	...	15	...	15
" Greasy	245	38	...	283
" Scoured	613	554	...	1,167
" Tops and Noils	2,079	...	...	2,079
" Waste	308	170	...	478
Yarns	4,225	25	12	4,262
Yeast	...	...	12	12
Zinc Ashes	...	81	...	81
" Bars	...	...	33	33
" Dross	...	598	...	598
" Ore	...	35	...	35
" Plates	62	...	...	62
" Sheets	460	8	33	501
Totals	1,472,933	931,854	1,918,346	4,323,133*

LIVE STOCK

	Import	Export	Local	Total
Cattle (No. of Head	...	44,219	60	44,279
Horses (")	56	8	...	64
Total	56	44,227	60	44,343

LUMBER, Etc.

Rough	97,337,476 feet B.M.
Dressed	1,450,083 feet B.M.
Ties (Railroad)	41,474 ties.
Firewood	6,159 cords
Grain Doors	234 carloads

BRICKS (common) ..... 1,917,900 bricks

MISCELLANEOUS FREIGHT

Ogilvie Flour Milling Company	3,900 carloads
C.P.R. for Port of St. John (Winter)	791 carloads

*This total of 4,323,133 tons is exclusive of grain, which amounted to approximately 4,662,456 tons.

THE GRAIN ELEVATOR SYSTEM

For the fourth successive year in its history, the Port of Montreal again in 1924 carried off the palm as the greatest grain-exporting seaport in the world. The Harbour Commissioners possess records showing the movement of grain through the various ports on the North American Continent since the year 1904, and during that period of twenty years no port, even amongst those more fortunate ones favored with twelve months of open navigation, has ever approached the figure for grain handling reached by the Port of Montreal in its seven months' season of navigation 1924, viz., 165,139,399 bushels received and 159,159,688 bushels shipped.

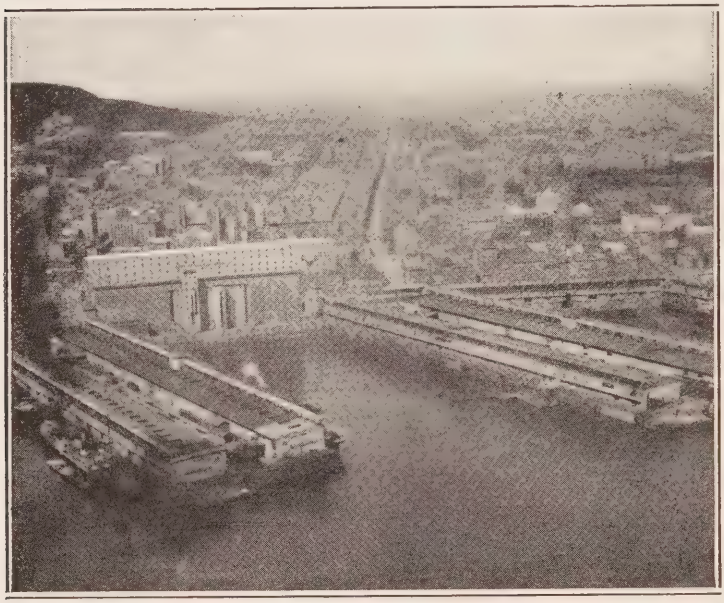
It does not require any too strenuous use of the imagination to appreciate that the physical handling, unloading from cars and boats, weighing, storing, shipping out to ocean vessels, etc., of almost 5,000,000 tons of grain, classified into grades, is in itself a stupendous undertaking. A breakdown in any portion of the system at any time during the season of navigation might very easily render such a result impossible. The taking care of 165,000,000 bushels of grain from the opening of navigation in May to its close in December needs perfect co-ordination of all those different factors which go to make up a grain elevator. Such co-ordination was evident during the season of navigation 1924. The results are impressive, and the Commissioners are proud of what this efficient machine known as their Grain Elevator system can accomplish in the vital job of getting Canadian wheat and oats and barley to its market abroad.

Comparisons are perhaps the best means of arriving at an appreciation of magnitude. The following recently appeared in print:—

"Farmers should never go to grain elevators. Confidence that one's efforts are doing something for the world is a handmaiden to happiness. Back in Alberta two hundred acres of waving wheat inspire pride in a farmer's heart, but they do not cut much of a figure in the Port of Montreal. If the farmer came to the Canadian metropolis, he could view the arrival of his year's effort and worry in one box car and one-half of

another, or in a small corner of a lake steamer. It would be unloaded from either conveyance in less than twenty minutes. In the top of the grain 'skyscraper' he would see his 200 acres of wheat dumped into a bin which would still be nine-tenths empty. Yet there may be a hundred more bins in this honeycomb called a grain elevator. Could he still stand the strain he might watch his wheat drop into the hold of a liner in about 12 minutes. Wheat must move fast at the neck of the bottle and faster yet when ice corks the neck between December and May, and so Montreal is capital of wheat—and of agrarian humility."

The following are the records of the four Grain Elevators for the year 1924, and of interest is the appearance, for the first time in the history of the Port, of Argentine corn, five vessel loads of which were imported during the season:—



Elevator No. 1—Capacity 4,000,000 Bushels

ELEVATORS 1, 2, 3 and "B"—1924—RECEIPTS

	Wheat	Oats	Barley	Corn	Rye	Flax	Other	Total
January	39,325	96,983	10,138	15,256	.....	.....	2,633	164,335
February	39,621	94,862	31,021	7,202	.....	.....	2,988	175,694
March	10,151	62,393	12,259	19,501	.....	.....	7,000	111,304
April	1,251,040	325,964	22,646	50,290	1,173	.....	1,170	1,652,283
May	17,805,711	2,639,088	811,728	1,909	1,488,753	318	.....	22,747,507
June	13,979,264	2,645,366	1,146,788	82,125	1,839,455	.....	.....	19,692,998
July	13,184,000	1,101,139	572,211	.....	2,022,252	.....	1,316	16,880,918
August	11,005,816	827,194	468,383	1,425	679,296	49,303	.....	13,031,417
September	16,435,525	2,134,182	670,430	859,167	4,445,038	24,987	.....	24,569,329
October	25,342,668	1,463,580	2,110,245	565,557	9,169,309	25,791	45,853	38,722,003
November	17,915,665	2,721,070	673,771	.....	2,664,993	176,696	63,532	24,215,727
December	922,485	1,237,768	452,285	1,096	484,977	65,147	12,126	3,175,884
	117,931,271	15,349,589	6,981,905	1,603,528	22,794,246	342,242	136,618	165,139,399

ELEVATORS 1, 2, 3 and "B"—1924—RECEIPTS

	WHEAT		OATS		BARLEY	CORN		RYE		FLAX	OTHER	TOTAL
	Can.	Amer.	Can.	Amer.	Can.	Arg.	Amer.	Can.	Amer.	Can.	Can.	
January	39,325	.....	96,983	.....	10,138	.....	15,256	.....	.....	.....	2,633	164,335
February	39,621	.....	94,862	.....	31,021	.....	7,202	.....	.....	.....	2,988	175,694
March	10,151	.....	62,393	.....	12,259	.....	19,501	.....	.....	.....	7,000	111.304
April	1,251,040	.....	325,964	.....	22,646	.....	50,290	.....	1,173	.....	1,170	1,652,283
May	16,694,774	1,110,937	2,639,088	.....	811,728	.....	1,909	.....	1,488,753	318	.....	22,747,507
June	13,149,349	829,915	2,645,366	.....	1,146,788	.....	82,125	.....	1,839,455	.....	.....	19,692,998
July	11,182,833	2,001,167	1,101,139	.....	572,211	.....	.....	2,179	2,020,073	.....	1,316	16,880,918
August	6,789,879	4,215,937	827,194	.....	468,383	.....	1,425	23,554	655,742	49,303	.....	13,031,417
September	5,585,497	10,850,028	2,134,182	.....	670,430	859,167	.....	588,297	3,856,741	24,987	.....	24,569,329
October	7,627,791	17,714,877	1,463,580	.....	2,110,245	565,557	.....	475,420	8,692,889	25,791	45,853	38,722,003
November	7,961,022	9,954,643	2,702,247	18,823	673,771	.....	.....	59,466	2,605,527	176,696	63,532	24,215,727
December	782,987	139,498	1,237,768	.....	452,285	.....	1,096	.....	484,977	65,147	12,126	3,175,884
	71,114,269	46,817,002	15,330,766	18,823	6,981,905	1,424,724	178,804	1,148,916	21,645,330	342,242	136,618	165,139,399

Elevator No. 2—Capacity 2,662,000 Bushels

SUMMARY OF GRAIN HANDLING—ELEVATORS 1, 2, 3 and "B"—1924

	C.N.R.	C.P.R.	Total Cars	Vessels	Receipts	Deliveries
January	20	74	94	...	164,335	461,393
February	32	74	106	....	175,694	693,089
March	36	35	71	....	111,304	688,536
April	60	161	221	17	1,652,283	924,124
May	1,462	1,559	3,021	234	22,747,507	19,882,224
June	931	597	1,528	243	19,692,998	20,001,256
July	145	83	228	244	16,880,918	15,362,614
August	1	18	19	186	13,031,417	10,828,273
September	2,646	1,817	4,463	227	24,569,329	25,755,818
October	5,895	5,967	11,862	241	38,722,003	39,301,631
November	3,150	2,777	5,927	189	24,215,727	23,947,086
December	391	345	736	25	3,175,884	1,313,644
	14,769	13,507	28,276	1,606	165,139,399	159,159,688

Summary of Grain Handling—Elevators 1, 2, 3 and "B"—1924

	Canadian Grain	American Grain	Argentine Grain	Total Receipts
	bus.	bus.	bus.	bus.
January	149,079	15,256	.....	164,335
February	168,492	7,202	.....	175,694
March	91,803	19,501	.....	111,304
April	1,600,820	51,463	.....	1,652,283
May	20,145,908	2,601,599	.....	22,747,507
June	16,941,503	2,751,495	.....	19,692,998
July	12,859,678	4,021,240	.....	16,880,918
August	8,158,313	4,873,104	.....	13,031,417
September	9,003,393	14,706,769	859,167	24,569,329
October	11,748,680	26,407,766	565,557	38,722,003
November	11,636,734	12,578,993	.....	24,215,727
December	2,550,313	625,571	.....	3,175,884
	95,054,716	68,569,959	1,424,724	165,139,399

Summary of Grain Handling—Elevator No. 1
Season 1924

	Receipts bus.	Deliveries bus.
January	.....	82,101
February	.....	215,330
March	.....	43,242
April	620,600	342,494
May	8,114,811	7,021,545
June	7,308,274	7,191,299
July	6,517,109	6,369,233
August	5,326,601	4,997,855
September	7,295,811	7,854,133
October	10,246,443	10,383,527
November	7,676,199	7,627,593
December	1,086,727	517,108
	54,192,575	52,645,460

Receipts		Deliveries	
Water	45,355,631 bus.	Conveyor	50,745,326 bus.
		Cars	1,284,983 "
Rail	8,836,944 "	Team	615,151 "
	54,192,575 "		52,645,460 "

First vessel unloaded April 28th, 1924.
Last vessel unloaded December 9th, 1924.

556 steamers
35 barges } 591 vessels —45,355,631 bus.

2,079 C.N.R. cars
2,529 C.P.R. cars } 4,608 cars—8,836,944 "

54,192,575 "

Canadian Grain—36,716,668 bus.
American Grain—17,475,907 "

54,192,575 "

Summary of Grain Handling—Elevator No. 2
Season 1924

	Receipts bus.	Deliveries bus.
January	164,335	221,905
February	175,694	203,074
March	109,539	219,525
April	664,929	436,091
May	8,507,857	7,277,889
June	7,484,374	7,789,009
July	6,056,956	5,423,660
August	4,987,009	4,890,222
September	8,755,051	9,034,882
October	12,307,108	12,435,197
November	8,849,905	8,743,879
December	1,454,748	649,062
	59,517,505	57,324,395

Receipts		Deliveries	
Water	41,995,872 bus.	Conveyors	53,369,539 bus.
		Cars	1,617,936 "
Rail	17,521,633 "	Teams	751,088 "
		Bags	1,585,832 "
	59,517,505 "		57,324,395 "

First vessel unloaded April 29th, 1924.
Last vessel unloaded December 9th, 1924.

563 steamers
72 barges } 635 vessels —41,995,872 bus.

1,337 C.N.R. cars
7,750 C.P.R. cars } 9,087 cars —17,521,633 "

59,517,505 "

Argentine Grain— 1,424,724 bus.
Canadian Grain 33,926,844 "
American Grain 24,165,937 "

59,517,505 "

Summary of Grain Handling—Elevator No. 3
Season 1924

	Receipts bus.	Deliveries bus.
January		
February		
March		
April	Elevator in course of construction.	
May		
June		
July		
August		
September	618,493	.....
October	4,984,625	4,732,956
November	689,007	1,554,377
December	629,314	.....
	6,921,439	6,287,333

Receipts		Deliveries	
Water	80,230 bus.	Conveyors	6,287,333 bus.
Rail	6,841,209 "		
	6,921,439 "		6,287,333 "

One vessel unloaded November 8th, 1924.

1 steamer — 80,230 bus.

179 C.N.R. cars
3,228 C.P.R. cars } 3,407 cars—6,841,209 "

6,921,439 "

Canadian Grain— 280,638 bus.
American Grain—6,640,801 "

6,921,439 "

Summary of Grain Handling—Elevator "B"
Season 1924

	Receipts bus.	Deliveries bus.
January	.....	157,387
February	.....	274,685
March	1,765	425,769
April	366,754	145,539
May	6,124,839	5,582,790
June	4,900,350	5,020,948
July	4,306,853	3,569,721
August	2,717,807	940,196
September	7,899,974	8,866,803
October	11,183,827	11,749,951
November	7,000,616	6,021,237
December	5,095	147,474
	44,507,880	42,902,500

Receipts		Deliveries	
Water	24,588,882 bus.	Conveyors	41,683,727 bus.
		Cars	1,120,789 "
Rail	19,918,998 "	Teams	97,984 "
	44,507,880 "		42,902,500 "

First vessel unloaded April 28th, 1924.
Last vessel unloaded November 26th, 1924.

326 steamers
53 barges } 379 vessels—24,588,882 bus.

11,174 C.N.R. cars—19,918,998 "

44,507,880 "

Canadian Grain—24,130,566 bus.
American Grain—20,377,314 "

44,507,880 "

Summary of Grain Handling—Elevators 1, 2, 3, and B—1924

	Receipts bus.	Deliveries bus.
January	164,335	461,393
February	175,694	693,089
March	111,304	688,536
April	1,652,283	924,124
May	22,747,507	19,882,224
June	19,692,998	20,001,256
July	16,880,918	15,362,614
August	13,031,417	10,828,273
September	24,569,329	25,755,818
October	38,722,003	39,301,631
November	24,215,727	23,947,086
December	3,175,884	1,313,644
	165,139,399	159,159,688

Receipts		Deliveries	
Water	112,020,615 bus.	Conveyors	152,085,925 bus.
		Cars	4,023,708
Rail	53,118,784 "	Teams	1,464,223 "
		Bags	1,585,832 "
	165,139,399 "		159,159,688 "

1,446 steamers
160 barges } 1,606 vessels—112,020,615 bus.

14,769 C.N.R. cars
13,507 C.P.R. cars } 28,276 cars—53,118,784 bus.

53,118,784 "

Canadian Grain—95,054,716 bus.
American Grain—68,659,959 "
Argentine Grain— 1,424,724 "

165,139,399 "

Stock in Elevators (at 31st Dec. 1924)—9,443,521 bus.

COLD STORAGE WAREHOUSE

The Cold Storage Warehouse operated by the Harbour Commissioners of Montreal as an adjunct to the Port's facilities, and particularly intended for the better care during transhipment of valuable perishable foodstuffs, had a splendid year's activity during 1924. Very heavy shipments of meat being exported through the Port were cared for while awaiting forwarding, and a glance at the comparative statement of stocks handled during 1923 and 1924 will show that more than twice the quantity was warehoused during the year under review.

The Canadian apple crop during 1924 was considerably below normal, and this is evidenced by the decrease of stocks held in the warehouse. A similar condition ruled in the egg trade. Marked increases, however, were experienced in the volume of butter, cheese, meats and poultry handled.

Western Beef in Storage

Warehouse and Cold Storage Plant

A Few of the Products Handled in the Cold Storage Warehouse

Attention is invited to the production of cheese in the whole Dominion for the year 1924, which amounted to 1,584,350 boxes, of which the Commissioners handled forty per cent, while thirty per cent of the total butter production of 748,302 boxes was stored in the warehouse.

The production of poultry, eggs and butter in the Western Provinces has shown a marked increase; large quantities of these products came to Montreal as the largest distributive produce market in Canada. The indications are that diversified farming in the Western Provinces is on the increase.

During the early part of the year it was indicated by the flow of stocks that additional refrigerated space was necessary, and accordingly an extension of approximately 500,000 cubic feet was provided, divided into six rooms. As the rooms were completed, they were placed in operation, and by midsummer were being utilized to capacity.

The following is a comparative tabulation of the more important products stored for the three years the warehouse has been in operation:—

	1922	1923	1924
Apples, brls.....	30,000	43,970	16,816
Butter, lbs.....	1,672,000	2,957,864	12,919,256
Cheese, lbs.....	13,250,000	26,235,450	53,286,415
Eggs, doz.....	1,200,000	1,806,450	1,492,110
Fish, lbs.....	850,000	1,222,229	1,078,553
Meat, lbs.....	1,500,000	4,633,065	9,726,668
Poultry, lbs.....	500,000	839,807	1,139,684

HARBOUR RAILWAY TERMINALS

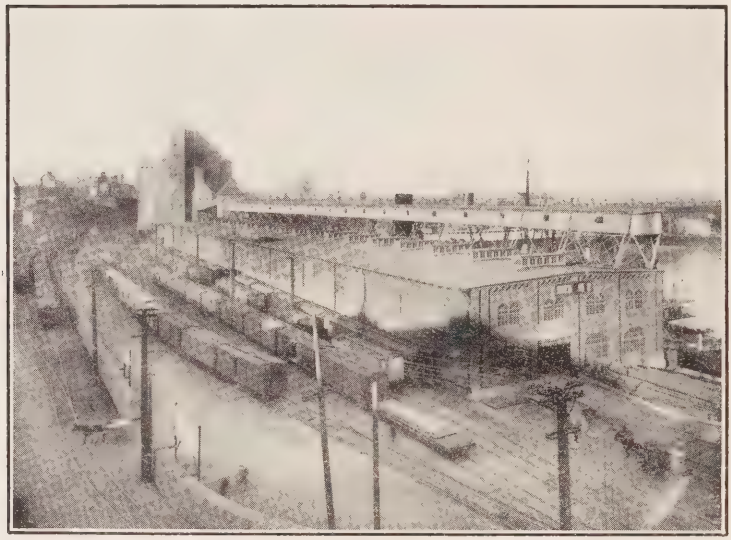
The movement of railway traffic on the Harbour Terminals during the winter months amounted to 33,361 cars, an increase of 6,664 cars, or 25%, as compared with the same period in 1923. This result, which may well be considered very satisfactory, was obtained without the development of any new source of traffic, but simply through an increased movement of the usual winter rail traffic. The outstanding elements of this traffic are the interchange of cars between the terminus of the Canadian National Railways in the eastern and western ends of the city, the handling of import freight from winter ports by the Canadian Pacific Railway at their sheds on King Edward Pier, and the handling of local traffic derived from the industries adjoining and linked to the Harbour Terminals.

The movement of rail traffic during the forepart of the season of navigation, May to August, did not attain the figures of the same period in 1923, the principal cause being the decreased movement of rail-hauled grain, as during these four months this year only 3,003 cars were unloaded in Harbour Elevators as compared with 9,645 cars during the same time in 1923. From the beginning of September to the close of the season of navigation entirely different traffic conditions were experienced, the general movement of traffic being such that during the month of October a record in operations was established, the car handling having reached

39,000 cars, and by the end of the season the loss in the movement of grain in cars had been fully made up, this year's total being 17,102 cars as against 15,781 in 1923.

The total car handling for the year amounted to 225,377 cars as compared with 216,382 cars in 1923.

To the opening up of Elevator No. 3 may be attributed a large share of the increase in the operations, as some 3,000 cars were handled thereto from the 22nd September to the end of the season.



View Showing Layout of Tracks at Rear of Transit Sheds

The general import and export traffic handled by rail shows a slight reduction as compared with last year. Taking as the basis of calculation the number of cars loaded and unloaded at the Harbour sheds, the figures being 38,444 cars this year, and 41,211 in 1923, this traffic, grain and coal excepted, did not show quite the same volume as last year.

The railway traffic to and from the Commissioners' Cold Storage Warehouse is beginning to assume important propor-

tions. During the year more than 1,300 cars were moved from the railway connections to the warehouse for unloading.

Local traffic movements, which always comprise a large part of the operations, were maintained practically at the level of last year. An increase of 2,500 cars is recorded in the interchange traffic, the largest of the local movements, which was offset by a similar decrease in the shipments from the eastern terminus, where extensive operations are furnished by connections with the Canada Cement Company and the Imperial Oil Limited. The transporting of coal, sugar, cement and other commodities within the boundaries of the Harbour, where the Commissioners are the only carriers, offer the double advantage of economy and despatch to industries so located as to be able to make use of the service, and from the constant growth in these operations we may legitimately assume that the service was one that was called for.

In the matter of construction and maintenance work, several items of importance were carried out. The inauguration of Elevator No. 3, Sheds 26 and 27 called for extensive track lay-outs; the heavy rolling stock now in use by the Railways and the 100-ton electric locomotives placed in service by the Commissioners caused the replacement, at the western end of the Harbour, of the 85 lb. steel by standard 100 lb. rails and switch work. To accommodate the new electric locomotives, two of which arrived in the Harbour at the close of the season, an important rearrangement of the Round House was put under way.

POLICE DEPARTMENT

During the season of navigation the Harbour Police Force, consisting of one chief, three captains, and sixty-two constables, regulated the traffic on the wharves, maintained order, and protected life and property within the Harbour.

For the winter season, the force consists of four officers and twenty-three constables.

During the season 131 passenger liners docked, carrying 32,166 passengers from overseas, and the same number of

ships sailed with 41,623 passengers. Passengers arriving at the Victoria Pier wharves from lake and river steamers numbered 73,685, and 37,000 passengers sailed from Victoria Pier for points up and down the river, making a grand total of 184,474 passengers arriving and departing at the Port during the season.

The Harbour police saved eleven persons from drowning during the year with the assistance of life belts and poles distributed along the Harbour front. The force was given a series of lectures and demonstrations in practical First Aid, with splendid results, as during the year accidents to employees and others were attended by the men on 37 different occasions. Two employees of the Commissioners received severe electrical shocks, and were apparently dead, but were revived by means of artificial respiration given by members of the police.

During the year 69 arrests were made on the wharves.

11,225 carters, loading at various places on the wharf, were checked and regulated by the traffic constables.

17,119 taxicabs and cabs carrying passengers to and from vessels were regulated coming on and leaving the wharves during the season.

ENGINEERING DEPARTMENT

New Works

The main items of the year's programme of new works were the continuation of last year's policy of wharf construction, very much in demand by the various shipping interests, and the rebuilding of some of the old shallow berth wharves, which were in a precarious condition, to give standard deep draught of 30 feet.

The erection of much-needed sheds had to be temporarily stopped, due to lack of suitable wharf space for the purpose. There is no doubt, however, that activities in that direction will have to be resumed just as soon as sufficient wharf frontage is available.

The following are the principal items of construction, repair and maintenance undertaken during the year:—

Wharves

Completion of Marine Tower Jetty at Elevator No. 3.

Construction of 600 ft. pile trestle for Nations Oil Co., Section 99.

Construction of wharf at Section 28.

Construction of wharf at Section 30.

Construction of wharf at Section 38.

Reconstruction of wharf at Windmill Point Section.

Consolidation of wharf at entrance to Lachine Canal.

Rebuilding portion of wharf at Longueuil.

Consolidation of wharf at Pointe aux Trembles.

Buildings

Completion of Elevator No. 3.

Completion of new Machine Shop at Aylwin Street Yard.

Extension of cold storage space in Cold Storage Warehouse.

Completion of Sheds Nos. 26 and 27.

Construction of new electric sub-station at Aylwin Street Yard.

Construction of rest rooms for elevator men.

Completion of new Wharf Office Building at entrance to Victoria Pier.

Alterations to interior of wharf office building at Elevator No. 1.

Water Mains, Sewers and Raceways

Construction of new water main, Sections 6 to 10.

Construction of new water main, Sections 26 and 27.

Extension of Duquesne Street sewer.

Rebuilding Raceway No 10, Lachine Canal.

Repairs to Raceway No. 9, Lachine Canal.

Railway Construction

Reinforcing the railway embankment, Sections 56 to 100, as a protection against water and ice scouring.

Laying of 1.67 miles of 100 lb. rail section

Relaying of 0.95 mile of 85 lb. rail section.

Laying out of new railway yard at Elevator No. 3.

Two new sidings constructed at Section 50.

New yard arrangement for Sheds Nos. 26 and 27.

New industrial tracks laid from Sections 28 to 30.

Continuation of Electrification of Railways.

Dredging

Dredging crib seats for wharf construction.

Drilling, blasting and dredging in Windmill Point Basin.

Continuation of dredging operations in Bickerdike Basin.

Airplane View of Canadian Vickers Dry-Dock and Ship Repair Plant

Sundries

Reconstruction of Elevator Pits Nos. 6 and 7 in Elevator No. 1.

Construction of a heated cleaning and repair pit at Aylwin Street Round House.

Extending and widening Aylwin Street Subway.

Painting exterior of Elevators No. 1 and "B."

NEW WHARVES

Reconstruction of Windmill Point Wharf

The old low level wharf on the north side of Windmill Point Basin, constructed fifty years ago, from 1865 to 1879, was built of small timber cribs, providing only 20 ft. berths, with a cope elevation 12 ft. above low water level. In 1903 the wharf was brought up to the standard high level wharf elevation of 119 Harbour Datum and the basin was dredged so as to allow vessels of 20 ft. draught to berth. This reconditioning was then considered as a temporary measure, and to arrive at the result, a second crib 12 ft. high was simply built over the existing one and the dredging work was carried out in front of the wharf without deepening the toe of the crib.

Different circumstances, including the war of 1914, delayed the contemplated reconstruction of this wharf into a permanent structure.

Crib timber found in the centre of the basin during the progress of maintenance dredging was the cause of an examination being made by diver to ascertain the condition of the wharf, and it was found in such a precarious condition that the Commissioners were convinced of the necessity of an immediate reconstruction of this wharf without consideration of the prevailing policy of economy.

Plans and specifications were therefore prepared and the lowest tenderers, the Atlas Construction Co. Ltd., were awarded the contract for the reconstruction on 23rd July, 1924.

The method of reconstruction decided upon was to underpin the toe of the cribs when necessary, and also the concrete

pedestals supporting the conveyor gallery bent columns, and to erect in front of the present crib a reinforced concrete slab anchored at the base and back above low water level into the wharf fill. Over the anchoring slab a mass concrete gravity wall was to be built up to elevation 119, the standard cope level. It was necessary to previously carry out some dredging work in order to provide the required 30 ft. berths.

This comparatively cheap method of reconstruction was unfortunately found to be quite impossible, due to the dilapidated state of the present wharf, which showed certain signs of collapse, which actually did start as soon as the clearing work for the purpose of insuring a firm bed for the underpinning was begun. Therefore a more elaborate type of construction was resorted to.

In the first scheme the existing line of wharf was to be rigorously adhered to, so as to avoid the necessity of interference with the existing conveyor galleries. The taking down of these galleries as a safety measure having been found urgent, the Commissioners came to the conclusion that the doing away with the existing awkward notch in the wharf would be greatly beneficial to the future efficient shipping operations in that part of the Port.

This permitted the use of cribs which were made of reinforced concrete for the first time in the history of the Harbour of Montreal. The design of these cribs is similar to those of the grain elevator No. 3 bins, but with a bottom slab. The construction was started on the deck of standard harbour scows and carried on till the side walls were of sufficient height to insure flotation of the crib. The scows were then filled with water and sunk, allowing the cribs to float freely. The bin walls were then completed and the first concrete crib was successfully sunk on its prepared bed on December 6th, 1924.

The advantage of the concrete crib, outside its permanent nature, is the possibility of rapid construction from the toe up to the cope. Its use, however, demands a very firm bottom, which cannot be found everywhere in the Harbour.

Only one crib was placed and partly ballasted, owing to the early setting in of winter, but the work is to be resumed as early as possible in 1925, and it is expected that the 1,200 lin. ft. of reconstructed wharf will be ready for operation before the close of navigation.

Bulkhead Wharf, Sections 27–28

The original line of the High Level Shore Wharf from Section 24 to Section 36 was changed a few years ago at the downstream end of Shed No. 27 and set back 75 ft. inshore.

When this alteration was made, the return end of the last crib sunk was left in a temporary condition.

This year it was found necessary to erect the permanent structure, and for this purpose an "L" shaped crib was built 83 ft. in length with a return end of 78 ft. in width. The two exposed faces of the crib substructure were built so as to form a solid wall of timber. This crib was sunk to the level of the adjoining ones and filled up, the joint between the old and the new cribs being closed by means of sheet piling.

The superstructure, which is of concrete, representing an extension of 715 ft., was built up to some 5 ft. in height during the season.

High Level Shore Wharf, Sections 31–32

Early in the season, tenders were asked for the construction of five additional cribs for Sections 31 and 32, together with part of the concrete superstructure.

The contract for this work was awarded to Messrs. Quinlan, Robertson & Janin on July 10th, 1924.

Five cribs of a total volume of 935,000 cu. ft. were built and sunk during the year, while 5 ft. of concrete superstructure was constructed over these.

This extension represents 715 lin. ft. of new wharf and is similar to the work described in the Annual Report of 1922.

High Level Shore Wharf, Section 38

The extension of the shore wharf from the downstream end of the Dominion Coal Co.'s wharf towards Laurier Pier was authorized by the Commissioners and the work started this year.

Seven 140 ft. cribs, representing a volume of approximately one million and a quarter cubic feet, were built. Three of these cribs were sunk and filled up before the close of navigation.

This undertaking was necessitated not so much for the purpose of the wharf itself as to provide a wider reclaimed area behind the wharf in order to permit the increase of the number of railway tracks for Elevator No. 3 service, which will tax the present layout beyond its efficiency limit.

Marine Tower Jetty at New Elevator No. 3

The concrete superstructure of the Marine Tower Jetty at new Elevator No. 3, commenced in 1923, was completed early this season.

RECAPITULATION OF WHARF CONSTRUCTION

	Number	Length on Cope Line Lin. ft.	Quantity Cu. ft.
Cribs Built and Sunk:			
Shore Wharf, Sections 31–32	5	715	934,837
do do 38–39	3	420	545,150
do do 28	1	161	139,751
Windmill Point, Concrete Crib	1	90	143,100
	10	1,386	1,762,838
Cribs in Progress:			
For Shore Wharf, Sections 39–40	4	560	224,179
For Windmill Point Wharf..	1	90	143,100

Quay Walls:

	Lengths on Cope Line	
Partly built formerly, now completed:	Lin. ft.	Lin. ft.
Marine Tower Jetty, Elevator No. 3	731	
Total completed		731
In progress:		
Shore Wharf, Sections 30–31	680	
do do 31–32	715	
do do 28	161	
		1,556
Total Quay Walls completed and in progress		2,287

Equal to 0.43 mile.

ELEVATOR CONSTRUCTION

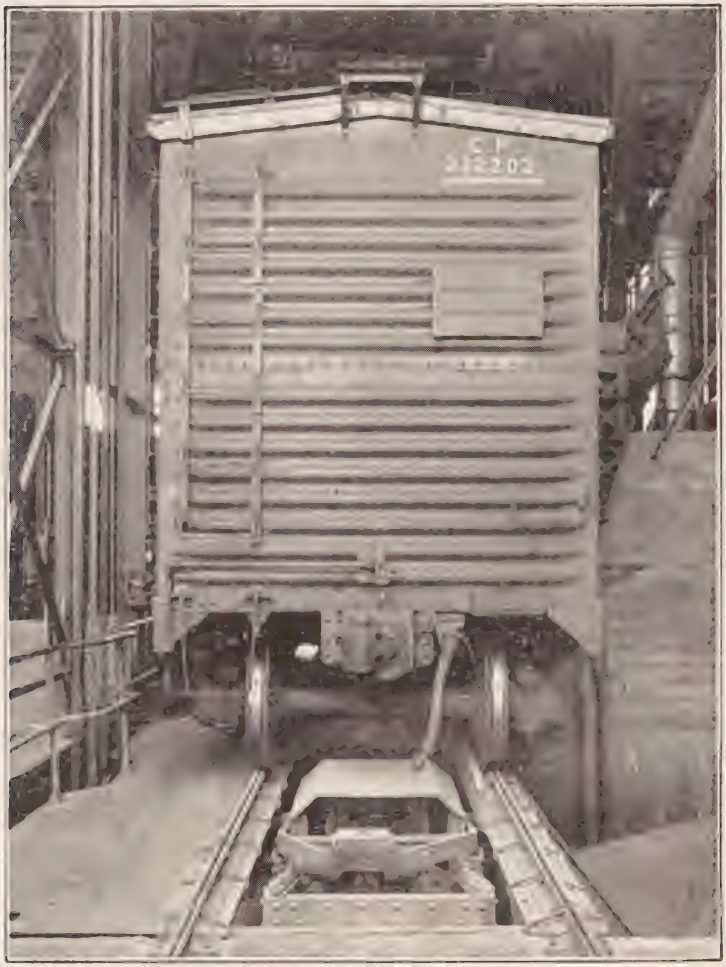
The year 1924, although memorable by the fact that the storage capacity of the Port Elevator System was increased by three and one-quarter million bushels, or over thirty-three per cent of its previous capacity, was not marked by the commencement of any new development along this line, but was devoted to the completing and putting in operation of the additions already under way in 1923.

Elevator "B," Windmill Point

The new concrete annex to Elevator "B," Windmill Point, containing 1,250,000 bushels storage, together with a new system of galleries 1,300 feet long, were completed.

The old galleries have one belt to each berth; the new portion has four belts for the first 770 ft. and two belts for the last 550 ft. along the wharves. All belts are 36 inch and rate at 15,000 bushels per hour. Four ships may be loaded at one time, or two streams may be directed to each of two vessels, or 60,000 bushels per hour from the new galleries. Five ships have actually been loaded from the old and new galleries

at the same time. At 7.30 a.m. on July 8th, four spouts on the new conveyor gallery were put into the S.S. "Innerton" and loading started. Work was suspended at 11.15, resumed at 1 p.m., and at 3.30 p.m. the vessel was loaded with 274,590 bushels of wheat. This achievement in six and one-quarter hours establishes a new record.



Showing Car on Dumper Ready to be Unloaded

An additional marine tower with a leg of 15,000 bushels capacity was also added to Elevator "B."

Elevator No. 3

The installation of machinery, electrical equipment, etc., at Elevator No 3, together with the gallery system on Tarte Pier, was in condition to receive grain in September, and on September 22nd the first grain was received and emptied by the car dumpers. On October 2nd, the first shipment was made to the S.S. "Walcheren" at Berth 44. During October and November, 6,287,340 bushels were received.

The new Jetty was completed and marine towers erected, two of which were put into operation.

Owing to the lateness of the season, no attempt was made to establish any new records, but all previous records are expected to be broken at this new unit during the season of 1925.

NEW SHOPS, ETC.

Guard Pier Shops and Shipyard

This plant, dealing exclusively with repairs and maintenance of the marine or floating plant, carried out the following principal items of work:—

Overhauling and fitting out of Dredging Fleet prior to opening of navigation season.

Extensive repairs to hull and machinery of tug "Robert MacKay."

The tug "John Young" was hauled up on the ways for repairs to stern bearing and hull.

One dump scow, No. 38, was hauled up on the ways and rebuilt.

Three new standard flat scows 100′ x 30′ and 9′ were built and numbered 58, 59 and 60, and extensive repairs were made during the year to a number of old flat scows.

Dredge "John Kennedy," which had a wooden hull, was entirely reconstructed and the machinery transferred to a

Dumper Beginning to Tilt Car

steel hull of increased dimensions. This work was done by Canadian Vickers, Ltd., under contract.

Inspection tug "Sir Hugh Allan" was thoroughly overhauled, two decks sheathed, all accommodation inside painted and the exterior of hull scraped and painted.

Tail shaft bearings were bushed, tail shafts withdrawn and a complete survey and inspection made by the Canadian

Steamboat Inspector. This work on this tug was carried out by Canadian Vickers, Ltd.

Two new steel life boats were fitted.

The whole of the fleet enumerated under the heading of "Dredging Fleet" was well maintained, and the floating shop fitted out last year continued to serve as a machine shop. An addition was made to the pattern store and a drying kiln was built.

During the year, Floating Elevators Nos. 16, 6 and 9 were sold.

Machine Shops, Notre Dame Street East

The installation of machinery in these shops was completed early in the year. All machine shop, boiler shop and allied work in connection with the plant, including elevators, was carried out at these shops. A steel construction pattern gallery of two floors was erected in the shed adjoining the shops. A car repair pit was also built in this shed and tracks laid over the pit. A swinging crane, water and air connections were installed. A steel sewer pipe, 8 ft. dia., special connecting chamber, were built for the City of Montreal and afterwards laid, and known as the outlet of the Duquesne Street Sewer.

The total number of orders executed during the year in these shops was 1,273, made up as follows:—

For	Elevator No. 1	105
	Elevator No. 2	91
	Elevator No. 3	33
	Elevator "B"	67
	Conveyor System	29
	Electrical Department	244
	Traffic Department	301
	Railway Maintenance and Operation	185
	General	218
	Total	1,273

Only two orders, generally classed as machine shop work, were sent to outside concerns during the year.

The plant, during this, its first year of operation, has given entire satisfaction.

A reinforced concrete inspection pit was built at the Harbour Yard Shops for the purpose of accommodating the electric locomotives. Length of pit 150 ft., steam heated and fitted with air and light connections.

New Sheds Nos. 26 and 27

The new Transit Sheds Nos. 26 and 27 were completed and fully equipped for the opening of navigation.

Cold Storage Power House

During the year this plant has been well maintained and no involuntary interruptions of service are recorded, excepting those due to failure of power. These power interruptions number thirty-five and range in duration from a few minutes to one hour and are, therefore, of little consequence.

The amount of refrigeration was at times well over the capacity of two 150-ton machines and the third machine was frequently brought into service.

For use on the Harbour Plant and works, 1,501 100-lb. blocks of ice were delivered.

Some maintenance work was carried out on the brickwork of the Power House.

Warehouse Equipment

The eastern halves of the second and third floors were insulated, piped up and formed into six cold storage rooms.

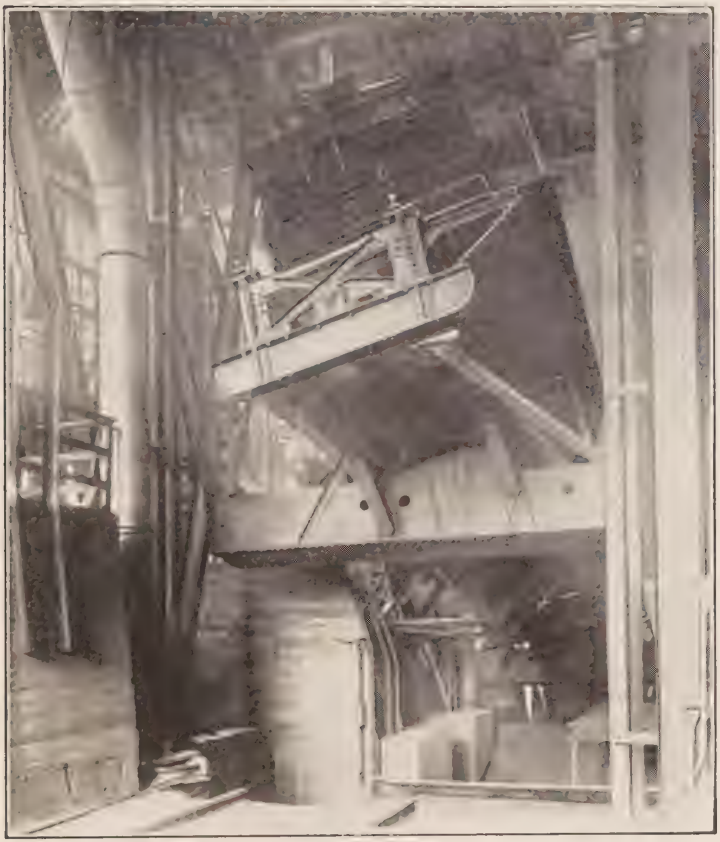
Total capacity, approximately 500,000 cu. ft.

Lineal feet of 2″ piping, 14,560.

One new freight hoist, capacity 12,000 lbs., and two spiral cheese chutes were installed.

Grain Elevators

Maintenance work and repairs were completed ready for the arrival of the first canal boat, and throughout the operating season a small gang of men, made up of the necessary trades, were retained for emergency breakdowns. The maximum delay was occasioned at Elevator "B" in September, when a boat carried away from her moorings during unloading and caused damage to the Marine Leg. The service of this leg



Striking View from Underneath Showing Car at Most Elevated Position

was lost for one working day. Particular attention was given to such items as loaders, belts, etc., with a view to increasing the carrying capacity where possible. Tests were conducted on various materials going into the manufacture of elevator buckets and a satisfactory specification has been evolved.

When it is considered that 4,662,456 tons of grain were handled into the elevators and 4,475,958 tons were handled out, or a total of 9,138,414 tons, the operation of the machinery was highly successful and delays were of minimum duration.

On December 1st, there occurred at Elevator "B" an explosion, attributed to grain dust. One life was lost and some damage was done, chiefly to the corrugated sheeting housing in the upper part of the building. The machinery was again put into operation on December 10th. Investigations into the cause of this explosion are being carried out.

Rest rooms were built on the tops of Sheds 4, 8, 12 and 17, and a rest room and toilet at No. 2 Elevator, for the convenience of the Elevator and Conveyor System employees.

A portion of the Conveyor Galleries at Elevator "B" was taken down to permit wharf reconstruction.

SUBWAYS

Aylwin Street Subway

Two additional railway bridges were erected to span the Aylwin Street Subway to permit the completion of the railroad yard at Elevator No. 3.

Work was also started on the construction of the eastern ramp or approach leading from the subway to the high level wharf to accommodate traffic to the western end of Elevator No. 3.

Nicolet Street Subway

The construction of Elevator No. 3 and railway facilities to serve this house necessitated the closing up of Nicolet Street Subway. The two steel bridges spanning this subway were removed, remodelled and erected at Aylwin Street. That

portion of the Subway over the railway embankment was filled up and Nicolet Street closed for traffic.

PAVING

The roadway from the eastern end of Shed No. 25 to the central entrance of Sheds 26 and 27 was paved during the season.

That portion of Papineau Subway on the Commissioners' property and the eastern and western ramp leading to and from the entrance to the subway were also paved. In all 3,100 sq. yds. of granite block paving were laid to complete the above-mentioned improvements. In addition to this, the usual paving maintenance along the wharf front amounted to some 4,500 sq. yds.

WATER MAINS

Windmill Point

A new 10-inch water main 295 ft. in length for fire protection and water supply was laid from Mill Street along Ogilvie Lane. An 8-inch main, 1,484 lin. ft. in length, was connected to this 10-inch water main and laid along and parallel to the Windmill Point Wharf from Section 5 to Section 10. Five hydrants, including all necessary fittings, monitor nozzles, etc., were connected to this new water service.

Sections 26 and 27

The 12-inch water main was extended from Papineau Ave. Subway in an easterly direction for a distance of 200 lin. ft. together with an 8-inch connection 82 ft. in length, leading to a hydrant some 25 ft. away from the extreme end of Shed 27.

SEWERS

Duquesne Street Sewer

The extension of Duquesne Street Sewer was approved by the City Authorities and the work carried out under agreement by the Commissioners.

The contract involved the fabrication and the laying of a special steel chamber, an extension of 80 lin. ft. of steel pipe, 8 ft. in diameter, towards the river side of the former sewer and 32 ft. of steel pipe 5 ft. in diameter towards the city side; also the removal of the wooden trestle spanning the railway track over the former outlet and the back filling of that portion of the railway embankment spanned by this trestle.

The old circular sewer, which was of steel construction and 5 ft. in diameter, was considered to be insufficient to cope with the increasing amount of sewerage passing through it. It was therefore, decided by the City Engineers to make the extension sufficiently large to take care of an additional pipe to be built over and above the former steel pipe to meet future requirements.

A steel chamber of irregular shape in design was constructed for this purpose--one end being oval in shape with a major axis of 11 ft. 8 in. and embodying two circular openings 5 ft. in diameter placed directly over each other and reducing to a circular opening 8 ft. in diameter at the other end. The length of this chamber is 8 ft. over all.

The lower opening was connected to the old sewer. 32 ft. of steel pipe 5 ft. in diameter was connected to the upper opening. This length was added to carry that portion of the future outlet over the Commissioners' property on the city side of the railway embankment. Ten sections of circular steel pipe, 8 ft. in diameter and 8 ft. in length, were laid and connected to the riverside end of the steel chamber. The new outlet is in comparatively deep water.

The special steel chamber as well as the circular steel pipes were fabricated at the Commissioners' Machine Shop and lowered into position and connected up by the usual construction force.

The wooden trestle spanning the two railway tracks over the former sewer was removed and that portion of the railway embankment filled up. The maintenance of this trestle was very heavy on account of its proximity to the Shell Oil Refinery. Constant watch was kept over this trestle on account

Another View of Unloading Operation, Car Tilted Forwards and Sideways

of fire frequently resulting from a spark of a steam locomotive causing ignition to the oily matters collecting in the direct vicinity of this trestle.

RAILWAYS

To cope with the development of the Port and the increase in traffic conditions, the mileage of the railways was extended

by 2.60 miles. In addition to this, 3.62 miles of track were lifted and relaid. The maintenance of the railway was carried on throughout the season by the various section gangs. Although the work was heavy for the year, it was done without causing any stoppage or hold-up to the Operation Department.

Sections 12 to 20

In view of the ever-increasing weight in the rolling stock handled by this railway, a change in the standard of the steel rail became an immediate necessity. To meet this condition, a start was made to replace the 85-lb. steel by the 100-lb. section. Tracks Nos. 1, 2 and 3, from McGill Street to Victoria Pier, were relaid with 100-lb. rail section. This represents a mileage of 1.67 miles of track. The length of the new 85-lb. steel relay in the upper end of the harbour, from McGill Street to Victoria Pier, including the pier heads, amounted to 1.95 miles.

Sections 26 to 30

The completion of Sheds 26 and 27 necessitated certain improvements and remodelling of the railway tracks from Sections 25 to 30. A new yard arrangement was planned to serve these sheds, also lessees of the new industrial wharves from Sections 28 to 30. To provide these facilities, 4,871 lin. ft. of new track were constructed.

Sections 35 to 41

One thousand, eight hundred and fifteen lin. ft. of track were relaid on the low level from Sections 35 to 41.

Elevator No. 3 (Sections 40 to 45)

A new railway yard extending from Sections 40 to 45 was constructed for the handling of the grain to and from Elevator No. 3. 7,122 lin. ft. of new track were laid to complete the work started last fall.

Section 50

Two new storage sidings, representing 665 lin. ft. of new track, were laid along Section 50. These spurs will be used in connection with the sorting out of cars at the Canadian National point of transfer at Vickers.

Section 71, Vulcan Wharf.

The old siding along Vulcan wharf became obsolete on account of its location. A new one 415 ft. in length had to be constructed, closer to and parallel to the edge of the wharf, to meet the requirements of the lessees of this wharf.

Sections 56 to 60 and 83 to 101

The railway embankment along the above-mentioned sections suffered very extensive damage by the ice in the spring. and the river current in the summer during the last decade, The electrification of that part of the railway necessitated the refacing of that stretch of the bank with rock over its entire length. This was done to protect the cribs holding the electric poles along the edge of the embankment. Approximately 130,000 cu. yds. of rock was used to widen the right of way of the railway.

The following table gives the mileage of Harbour Railway tracks and the number of cars handled during the last fifteen years:—

	Mileage of Harbour Railway	Number of Cars handled by Commissioners
1910	28.86	79,466
1911	28.97	93,859
1912	34.91	112,911
1913	37.30	114,531

	Mileage of Harbour Railway	Number of Cars handled by Commissioners
1914	39.88	114,499
1915	44.92	157,480
1916	49.11	234,439
1917	52.35	215,394
1918	55.35	247,009
1919	58.32	182,328
1920	58.34	174,181
1921	58.54	143,564
1922	58.77	200,593
1923	60.64	216,382
1924	63.24	225,377

The extent of the Harbour Commissioners' Railway tracks at the end of 1924 is as follows:—

	Lin. ft.	or Miles
South of Lachine Canal, Bickerdike Pier, Windmill Point Wharf and West	38,650	7.3200
To Guard Pier	10,400	1.9697
Sections 12 to 46, High Level, Main Line tracks	51,170	9.6913
To Piers, Elevators, Crossovers and Sidings, etc	121,814	23.0708
Sections 35 to 46, Low Level, Main Line tracks	10,080	1.9090
Sections 46 to 101, High Level, Main Line tracks	54,134	10.2526
To Wharves, Industries, etc	45,386	8.5958
At South Shore, St. Lambert	2,300	.4356
Grand Total Tracks, end of 1924	333,934	63.2448
Grand Total Tracks, end of 1923	320,200	60.6437
Increase in 1924	13,734	2.6011

The extent of the wharves and piers at the end of the season is as follows:—

30 ft. depth and over at O.L.W.	29,833	lin. ft. or	5.6502	miles.
25 ft. to 30 ft. depth	14,712	do	2.7863	do
Total deep draught	44,545	do	8.4365	do
20 ft. depth and under	1,398	do	.2647	do
Total Wharfage end of 1924	45,943	do	8.7012	do
Total Wharfage end of 1923	45,213	do	8.5630	do
Increase in 1924	730	do	.1382	do

DREDGING AND FILLING

Dredging operations for the season 1924 were commenced on May 13th, with the Dredge No. 5 being placed in commission. Dredge No. 6 followed on May 20th. The dredge "John Kennedy" did not go into commission until August 4th, the late start being due to the delay in replacing the machinery in the new hull, and the consequent delay in refitting.

Dredge No 5 went into Bickerdike Basin to dredge rock and remained there, with the exception of a few days in December, throughout the entire season.

Dredge No. 6 was engaged on some maintenance work at the coal berths on the south side of Windmill Point Basin, the first stage of deepening Windmill Point Basin north side, the entrance to Bickerdike Basin, one crib site at Section 28, five crib sites at Section 32 (in continuation of the scheme of improvement and extension commenced in 1923), and five crib sites at Section 38, and on the site of one concrete crib at Section 8, Windmill Point Basin.

The Floating Derricks were placed in commission on the following dates: No. 8, April 19th; No. 4, April 24th; No. 3,

New Car Dumper House at Rear of Elevator No. 3

April 26th; No. 6, May 21st, and No. 5 on July 23rd. Filling was carried on at the following places:—The Railway Embankment, Sections 56 to 100, Sections 28, 32 and 38, also Section 8, Windmill Point Basin, Government Wharf at Longueuil and the small wharf at Pointe aux Trembles. The derrick work at Sections 8, 28, 32 and 38 consisted of the usual ballasting, filling and backing of the cribs with dredged and other material. Derricks also completed the filling of the marine tower jetty at Elevator No. 3.

A derrick was engaged on refacing the upstream side of the Government Wharf at Longueuil with rock. This wharf was in very bad condition due, principally, to ice shoves. The same condition existed at the wharf at the village of Pointe aux Trembles and it was found necessary to send a derrick and the necessary material to effect repairs.

The work in connection with the Railway Embankment, Sections 56 to 100, consisted of refacing the bank with rock for

its entire length from the dry dock basin to the west side of Imperial Oil Company's wharf, this rip-rap to serve as a protection against the ice in the winter and the river current in the summer as the water recedes. The total length covered was 4.17 miles and the bank was filled to a minimum width of eight feet from the river side rail, tailing out to a natural slope below the water.

Besides handling the dredged material, the derricks were employed on a number of other important works, such as ballasting and sinking cribs, loading trains with material for the railway bank, Sections 41 to 44, unloading scows of ballast, cinders, etc., from ships, sweepings and rubbish from wharves, handling and placing concrete shells for wharf construction, handling and clearing old timbers from wharf at Windmill Point which was in a state of collapse, assisting the contractors in handling the floating plant on which the concrete cribs were constructed in Windmill Point Basin. Also a number of items of minor importance, too numerous to mention.

Owing to the heavy construction program undertaken for this year and to the lateness of the commencement of the contract work, it was found necessary to place the fleet on twelve-hour days from October 27th to December 6th, with quite satisfactory results.

Drilling and Blasting

The drilling and blasting boat was placed in commission for the first time in a number of years. Commencing work on June 11th, it alternated between the Bickerdike Basin, where drilling and blasting operations were carried on in connection with the dredging, and Windmill Point Basin, where work was carried on in connection with the second stage of deepening this basin on the north side. The drill boat was laid up on December 15th.

In connection with the dredging on Bickerdike Pier, a contract for drilling and blasting on the high ground at the west end of the basin was let to Quinlan, Robertson and

Janin, Limited, and while the work has not progressed with all the speed that was anticipated, that portion of the work completed (about one-third of the contracted amount) has proved very satisfactory and will facilitate the progress of the work of dredging this basin.

Testing and Sweeping

Owing to the heavy construction program undertaken for 1924, also to the fact that we had only one really serviceable tug available for our ordinary towing work, it was not possible to carry on any testing or sweeping operations this year. Although a number of doubtful areas were sounded over during the season, it is not considered that this method of ascertaining the clearance of a channel or berth is nearly as satisfactory or exact as testing and sweeping with the proper vessel.

The work of the dredges, derricks and drill boat was carried on in a very satisfactory manner and results compare favorably with those of other years.

The following are the quantities of dredging and filling for the season:—

Dredging

	Cu. yds. (scow)	Cu. yds. (scow)
Rock:—		
Bickerdike Basin	257,305	257,305
Other Material (Into Flat Scows):—		
Deepening Windmill Point Basin	14,400	
Maintenance, Windmill Point Basin	2,000	
Entrance Inland Basin	3,400	
Crib Seats, Section 28	140	
do do 32	4,010	
do do 38	8,635	
do do 8	4,680	
Total other Material in Flat Scows		37,265

	Cu. yds. (scow)	Cu. yds. (scow)
Other Material (Into Dump Scows):—		
Maintenance, Windmill Point Basin	6,920	
Entrance Inland Basin	6,750	
Deepening Windmill Point Basin	17,720	
Crib Seats, Section 38	3,800	
do do 8	200	
Total other Material in Dump Scows		35,390
Grand Total Dredging		329,960

Filling

Rock (by Derrick):—		
Windmill Point Wharf	4,200	
Section 32	63,000	
Section 28	9,800	
Section 38	46,370	
Marine Tower Jetty, Elevator No. 3	12,500	
Sections 42-44	825	
Railway Embankment, Sections 56-100	117,200	
Pointe-aux-Trembles Village Wharf	600	
Government Wharf at Longueuil	2,350	
Duquesne Street Sewer	460	
Total Rock Filling		257,305
Other Material (by Derrick):—		
Section 32	18,425	
do 38	1,800	
do 41	1,200	
Marine Tower Jetty, Elevator No. 3	6,150	
Sections 56-100	9,690	
Total other Material by Derrick		37,265
Other Material (by Dump Scow):—		
Marine Tower Jetty, Elevator No. 3	6,000	

Victoria Pier (protecting end)	3,000	
Section 32	26,390	
Total other Material by Dump Scow		35,390
Grand Total Dredging Material to Fill		329,960

Sundry Items of Filling

Material Clammed by Derrick:—		
Section 32	2,450	
Railway, Section 41	1,450	
Sections 56-100	300	
do 38	300	
Total Material Clammed		4,500
Ballast (by Derrick):—		
Guard Pier	725	
Section 32	2,575	
Marine Tower Jetty, Elevator No. 3	300	
Section 38	450	
Total Ballast		4,050
Wharf Refuse (by Derrick):—		
To spoil	2,815	
		2,815
Grand Total Sundry Items of Filling		11,365

Earth, Cinders, etc., from City Contractors (by Team)

Windmill Point	20,425	cu. yds.	(estimated)
Elevator "B"	3,500	do	do
Alexandra Pier	36,000	do	do
King Edward Pier	34,000	do	do
Jacques Cartier Pier	1,500	do	do
Sheds 26 and 27	4,000	do	do
Sections 27 to 32	80,000	do	do
Total Filling by Teams	179,425	do	do

ELECTRICAL DEPARTMENT

Power and Operation

The Harbour Commissioners purchased, under contract, electric power from the Montreal Light, Heat & Power Co., for their requirements, as follows:—

	1923	1924
	H.P. Hours	H.P. Hours
Cold Storage Warehouse	2,966,589	3,721,535
Elevator No. 1	2,463,493	2,459,233
Elevator No. 2	2,008,331	2,726,479
Elevator No. 3	.....	658,196
Elevator No. 3—Construction	33,718	46,846
Elevator "B" and Conveyors	1,324,174	3,168,436
Elevator "B" Extension—Construction	13,895	5,698
Conveyors	1,009,900	1,381,696
Freight Hoists	113,637	125,236
Harbour Lighting	631,821	843,956
Harbour Yard	78,500	76,548
Sheds Nos. 2 to 15	294,059	277,689
Sheds Nos. 16 to 19	54,564	50,419
Sheds Nos. 24 to 27	23,165	21,232
Sheds Nos. 44 to 47	.....	3,273
Railway Electrification	1,561,035	2,444,490
Head Office—Power and Lighting	32,931	36,935
British Empire Lumber Corp. Ltd	220,216	189,776
Miscellaneous	136,396	64,284

Lighting of the High and Low Level Wharves

All the lighting of the High and Low Level Wharves for the season of 1924 was carried out by the Harbour Commissioners' Electrical Department and the power supplied through the several sub-stations. The number of lamps in service varied from time to time during the season and reached a maximum of 272 units for the series, and 18 for the multiple circuit.

No. 1 Series Circuit,		59	lamps—	Windmill Point and Bickerdike Pier.
No. 2	do	39	do	McGill Street to No. 1 Elevator.
No. 3	do	49	do	No. 1 Elevator to Section 19.
No. 4	do	37	do	Section 19 to Section 22.
No. 5	do	25	do	Section 22 to Section 35.
No. 6	do	63	do	Section 35 to Sutherland Pier.
Multiple Circuit		18	do	Victoria Pier.
Total.....		290	lamps.	

Railway Electrification

The electrified portion of the Harbour Railway Terminals extending from Section 12 to Section 101 was in successful operation during the entire season of 1924.

Several miles of additional overhead trolley was added as the new tracks were completed and linked up with the existing lines. The two 83-ton C.N. Ry. locomotives which were in service during 1923 were again in use for this season, since the four 100-ton electric locomotives which the Commissioners had on order were not shipped in time to be of any service for the season of 1924.

These four locomotives are, however, being assembled and one is now ready for trial, the other three to be completed and tested before the opening of navigation 1925.

Sub-Stations

A new sub-station was erected near Section 42 for the power requirements of the new Harbour Yard, Shops and No. 3 Elevator, to supply approximately 5,000 H.P. load.

Two 12,000-volt transmission lines were carried over to supply the power transformers at this station which have a 6,000 K.V.A. capacity.

The new sub-station at Elevator "B" has been in full operation during the season and satisfactorily changed over to the 12,000-volt service.

Provision is being made to install two additional 1,000 K.V.A. motor generator sets at the railway power house to operate the four new electric locomotives that will be in service for the opening of navigation 1925.

Transmission lines, service lines and general additions have been made to cope with the demands for power and lighting throughout the season, the whole showing a decided increase over the season of 1923.

High Tension Transmission Lines

The transmission, distribution and feeder lines were extended to meet the requirements of the various companies using power or lighting, as well as for our own needs, the distribution being as follows:—

	H.P.
Station No. 1	5,927
do 2	4,065
do 3	4,512½
do 4	2,887½
do 5	3,942
Total Connected Load	21,334 H.P.

Freight Hoists in Connection with Transit Sheds

Year	Total Teams Carried	No. of Days Operated	K.W. Hours	H.P. Hours	Commenced Operating	Ceased Operating
No. 1, Shed No. 12 (Single Team Hoist)						
1922	4,325	194	8,100	9,519	April 25	Dec. 9
1923	5,648	197	12,350	16,556	April 25	Dec. 8
1924	5,594	203	9,450	15,749	April 15	Dec. 10
No. 2, King Edward Pier (Single Team Hoist)						
1922	19,156	197	34,800	46,648	April 24	Dec. 9
1923	18,265	196	41,550	55,877	April 26	Dec. 11
1924	17,085	202	49,250	66,017	April 22	Dec. 13
No. 3, Alexandra Pier (Double Team Hoist)						
1922	10,049	193	7,730	10,362	April 28	Dec. 9
1923	14,155	193	8,930	11,972	April 27	Dec. 8
1924	12,428	195	9,185	12,312	April 22	Dec. 6
No. 4, Jacques Cartier Pier (Single Team Hoist)						
1922	4,650	189	3,929	4,049	April 24	Dec. 2
1923	5,857	189	4,545	6,094	April 27	Dec. 5
1924	5,965	195	6,365	8,532	April 22	Dec. 5
No. 5, Alexandra Pier (Double Team Hoist)						
1922	3,675	187	2,340	3,137	April 26	Dec. 2
1923	4,219	186	2,700	3,616	April 26	Dec. 1
1924	6,133	192	3,325	4,457	April 24	Dec. 4
No. 6, Sheds Nos. 24 and 25 (Double Team Hoist)						
1922	5,628	190	3,750	5,025	April 27	Dec. 2
1923	6,582	196	4,450	5,965	April 24	Dec. 8
1924	3,718	194	1,900	2,546	April 22	Dec. 6
No. 7, Sheds Nos. 16 and 17 (Double Team Hoist)						
1922	5,011	188	1,965	2,633	April 26	Dec. 2
1923	7,573	189	3,900	5,293	April 27	Dec. 6
1924	8,139	195	4,475	5,998	April 22	Dec. 6
No. 8, Sheds Nos. 18 and 19 (Double Team Hoist)						
1922	7,476	192	4,600	6,170	April 28	Dec. 9
1923	9,092	192	6,500	8,714	April 28	Dec. 9
1924	6,914	201	6,500	8,713	April 22	Dec. 13

MAINTENANCE

Wharves.

The usual maintenance force was at work throughout the season and, in addition to the ordinary patching, carried out the following important repairs:—

Drove sixty piles at Guard Pier to moor the Harbour Fleet.

Built a pile trestle 600 ft. long to carry an oil pipe line and drove 4 clusters of 7 piles each to breast off shipping from the pipe line for the Nations Oil Refineries. Sixteen of these piles had to be replaced during the course of the summer, having been broken by a passing steamer.

Drove 4 clusters of 5 piles each at Guard Pier to accommodate the Floating Crane.

Drove 4 clusters of 3 fender piles at Marine slipway, Guard Pier.

Drove 5 fifty-foot piles to be used as fenders for the Longueuil Ferry service.

Three temporary mooring posts were erected to accommodate the oil ships mooring at the Montreal Light, Heat & Power Co.'s dock, Section 33.

Drove 30 sheet piles 40 ft. in length to retain the bank during the dredging of the crib seats at Section 38.

Drove 20 piles 50 ft. long to retain the filling for the extension of the wharf at Section 28.

Drove 48 sheet piles at the entrance of the new lock, Lachine Canal.

Altered 2 mooring posts on the Canal side of Elevator "B."

Removed portion of Dominion Coal Co.'s trestle at Section 38 to allow for the sinking of a new crib.

Repaired 125 lin. ft. of wharf face at Section 34.

Built 35 lin. ft. of wing wall 7 ft. high and removed 88 lin. ft. of coping and filled cribwork with rock filling at Pointe-aux-Trembles Wharf.

Repaired 150 lin. ft. of wharf face on the west side of Jacques Cartier Pier.

Repaired 100 lin. ft. of wharf coping and made two foun-

dations for new mooring posts at Section 6, Dominion Coal Co.'s dock.

Repaired 35 lin. ft. of No. 10 raceway, Windmill Point.

Rebuilt 300 lin. ft. of wharf face; also ice breaker, and filled same with rock at the Government Wharf at Longueuil. Also banked 400 lin. ft. of the inshore wall with rock.

Repaired 150 lin. ft. of wharf face on the west side of Laurier Pier and built two new moorings on the east side of Laurier Pier.

Renewed some 900 sq. ft. of planking on the west side of Sutherland Pier. Rebuilt three mooring foundations on the east side of the pier. Closed two ramps in bulkhead wharf at foot of Pius IX Ave., making it available for small craft.

Altered the position of 11 mooring posts and renewed 200 lin. ft. of coping at Sections 6 and 7 and 12,000 ft. B.M. of planking Sections 7 and 8, Windmill Point.

Constructed new foundations for five moorings at Sheds 3 and 5, three moorings at Shed 6, five moorings at Sheds 7 and 9 and two moorings at Shed 15.

Placed six vertical fenders on the face of the wharf at Shed 19; also two fascine fenders.

Built and sank a pony crib to close the gap between the old crib and the new concrete one at Section 9, Windmill Point.

Transit Sheds and Elevators.

The following are the most important items of work done by the Shed Maintenance force during the season:—

The exterior of Sheds 2, 3, 5, 16 and 17 were renovated with two coats of paint.

The lower section on the river front of Shed 13 received one coat of paint.

All the rolling doors of Sheds Nos. 2 to 19 inclusive were thoroughly repaired and their surface covered with two coats of paint.

The roofs of Sheds Nos. 44, 45, 46 and 47 were thoroughly repaired and entirely re-surfaced.

One hundred and fifteen steel doors were fabricated and erected to replace old ones.

The following conveyor galleries, supports and downspouts were given two coats of paint:—

Gallery from east end of Elevator No. 2 to south-east end of Shed 17.

Gallery from Shed No. 2 to Elevator No. 1.

The steel grain bins of Elevator No. 1 were given two coats of paint.

The exterior of the steel portion of Elevator "B" and the Conveyor Galleries east of this house were given two coats of paint.

Four new rest rooms were built in Sheds Nos. 4, 8, 12 and 17 for the convenience of elevator and conveyor system employees.

The old wooden winch galleries on the riverside of the upper floor of Sheds 6, 8, 11, 12 and 14 were taken down and replaced with permanent concrete ones.

The central ramp of Shed No. 2 was filled up and its area reclaimed as floor space.

Plumbing.

The laying of sewer and water main extensions, the equipment of lavatory rooms, the repair and renewal of the plumbing system along the water-front, including all buildings, transit sheds, grain elevators, etc., owned by the Commissioners, were carried out by the usual plumbing force.

Railways.

The usual routine of maintaining switches and slip diamonds, renewing ties, rails, etc., and surfacing in general was carried out during the season. The renewal of ties this season amounted to some 20,000.

General.

The general cleaning, watering and upkeep of the high and low level roadways was kept up during the season.

Shed sweepings and dunnage from all sheds were carted away.

All drains, gullies, etc., were kept clear and flushed with the fire hose as required.

All water connections throughout the Harbour were kept in good order.

All water meters were read at the end of each month and checked up with the City's readings.

All public latrines between Sections 4 and 45 were connected up by the 15th May and disconnected by the 25th November. These were all flushed out twice daily and kept clean and in good order.

Water service in the sheds was connected up and water turned on by 15th May and disconnected by 10th December, except Sheds 2, 8 and 18, which remain on for the winter.

Water was given to 731 vessels during the season of 1924, an increase over last season of 164 vessels, the amount of water given being 2,684,200 cubic feet.

Life Saving Equipment.

Every precaution was taken to facilitate the saving of life and the prevention of accident by the erection of railings and the distribution of ropes, gaffs and life preservers at 120 different points along the water-front. During the season the lives of eleven persons were saved, but it is regrettable to report that these efforts were again much frustrated by the frequent theft of various articles of this equipment.

Fire Prevention, etc.

In addition to the 39 five-nozzle and 9 low fire hydrants between Sections 4 and 45, a 500-ft. hose reel with all appurtenances is stationed on each of the piers in the central Harbour, while thirty-three 20-gallon fire extinguishers are installed in the transit sheds and elevators. These are inspected daily and are in constant readiness.

The quick acting gates in the Flood Wall are kept in good working order at all times.

The usual force of watchmen, etc., was employed to protect the property of the Commissioners, to guard the public from accident and to regulate the Harbour dumping grounds.

THE FLOATING CRANE

The 75-ton Floating Crane which was added to the equipment of the Port in 1909 has again proved its value.

The following is the record of the floating crane for the season of 1924:—

Number of working days	216	
Number of days working	162	
Number of hours working	787	
Percentage of time in actual operation	65%	
Total number of lifts		
Commercial	1,393	
Commissioners' service	210	
Average weight of lifts:		
Commercial	6½	tons
Commissioners' service	15½	"
Greatest lift:		
Commercial (Electric Locomotive)	45	"
Commissioners' service (stern of tug "John Young")	60	"
Greatest tonnage from single ship:		
SS. "Cairndhu"	508	"
Total weight lifted:		
Commercial	9,119	"
Commissioners' service	3,160	"
Total weight lifted during season 1923	8.608	"

The following table shows the maximum and average number of workmen employed by the Harbour Commissioners during the season of 1924:—

	Maximum	Average
Maintenance of Harbour	172	104
Maintenance of Steel Sheds	22	14
Harbour Yard:		
Carpenters, Blacksmiths, etc.	95	82
Sawmill and Timber Boom	14	12
Round House:		
Machinists, etc.	23	22
Machine Shop, Guard Pier	108	85
Shipyard	105	81
Dredging Fleet:		
Dredges, Tugs, etc., Crews	157	150
Elevator No. 1	31	30
do Shovellers	67	54
Elevator No. 2	38	35
do Baggers	39	19
do Shovellers	88	68
Elevator "B"	58	46
do Shovellers	81	55
do Conveyors	22	19
Elevator No. 3	49	46
Conveyor Galleries, Elevators 1 and 2	63	55
Electrical Department	164	159
Traffic Department	125	103
Cold Storage Warehouse:		
Operation and Maintenance	61	53
Power House	9	7
Construction of Wharves, Tracks, etc.	268	189
do Elevator "B," Conveyors, etc.	51	40
do Elevator No. 3	248	194
Police	65	63

NOTE.—The above figures do not include the men working for the different contractors on Harbour construction.

WATER LEVELS

The depth of water for navigation in the Montreal Harbour Ship Channel and on the Sill of Lower Lock Lachine Canal is given in the following table:—

	Depth on Old Lock Sill, Lachine Canal		Depth in Harbour Channel	
	Average 1905-1924	Average 1924	Average 1923	Average 1924
May	20′ 7″	21′ 1″	35′ 11″	36′ 6″
June	18′ 2″	17′ 11″	32′ 8″	33′ 4″
July	16′ 3″	15′ 8″	30′ 5″	31′ 1″
August	15′ 3″	14′ 10″	29′ 4″	30′ 3″
September	14′ 8″	14′ 6″	29′ 3″	29′ 11″
October	14′ 8″	14′ 10″	28′ 7″	30′ 3″
November	14′ 10″	13′ 10″	28′ 7″	29′ 3″

APPRECIATION

The foregoing review of the year's achievements would not be complete without an expression of appreciation of the manner in which the exacting duties and harassing problems of the year were mastered by the staffs of the different Departments.

From the opening until the close of navigation the daily work of the staff was characterized by a loyal and courageous devotion to duty, and the Commissioners desire to pay tribute to their zeal, efficiency and co-operative spirit.

1924

PORT OF MONTREAL

Statement showing the Nationalities and Tonnage of Sea-going Vessels that arrived in Port during the season of 1924, which were navigated by 77,189 seamen.

Nationality	Number of Vessels	Tonnage
British	898	3,192,437
Norwegian	99	218,495
Italian	71	233,042
Dutch	33	84,739
Greek	30	88,762
United States	25	115,066
Danish	24	44,606
French	15	35,965
Swedish	6	9,774
Dansig	6	33,457
Spanish	5	16,390
German	3	5,009
Belgian	3	7,955
Latvian	2	3,498
Hungarian	1	3,152
San Domingo	1	1,548
Finish	1	2,437
Total	1,223	4,096,332

Of the above 1,191 were built of iron or steel, with a tonnage of 4,092,347, and 32 were built of wood with a tonnage of 3,985.

PORT OF MONTREAL

Statement showing the classification of Ocean Going Vessels that arrived in Port during the past ten years.

Year	Steamships		Barques		Ships and Brigs		Schooners		Grand Total	
	No.	Tonnage	No.	Tonnage	No.	Tonnage	No.	Tonnage	Vessels	Tonnage
1915	483	1,656,634	..	....	1	1,094	..	....	484	1,657,728
1916	569	1,965,161	..	....	..	....	..	....	569	1,965,161
1917	579	1,984,233	..	....	..	....	..	....	579	1,984,233
1918	644	1,910,621	..	....	..	....	..	....	644	1,910,621
1919	702	2,041,638	..	....	..	....	..	....	702	2,041,638
1920	637	2,018,861	..	....	1	1,658	..	....	638	2,020,519
1921	807	2,598,494	..	....	..	....	..	....	807	2,598,494
1922	968	3,451,703	..	....	..	....	1	1,356	969	3,453,059
1923	892	3,221,781	..	....	..	....	..	....	892	3,221,781
1924	1,222	4,096,216	..	....	..	....	1	116	1,223	4,096,332

PORT OF MONTREAL

Statement showing classification of Vessels that arrived in Port, for the past ten years, from the Lower St. Lawrence and Maritime Provinces.

Year	Steamships		Schooners		Grand Total.	
	No.	Tonnage	No.	Tonnage	No.	Tonnage
1915	312	601,916	19	1,630	331	603,546
1916	97	165,473	32	3,822	129	169,295
1917	34	23,635	34	2,899	68	26,534
1918	18	20,589	12	2,272	30	22,861
1919	62	134,971	22	2,671	84	147,642
1920	19	10,724	6	486	25	11,210
1921	151	292,870	6	592	157	293,462
1922	223	479,333	2	245	225	479,578
1923	187	461,645	3	294	190	461,939
1924	231	498,903	4	282	235	499,185

1924

PORT OF MONTREAL

Combined Statement showing the number and tonnage of all vessels that arrived in Port during the past ten years.

Year	TRANS-ATLANTIC		MARITIME PROVINCES		INLAND		GRAND TOTAL	
	Vessels	Tonnage	Vessels	Tonnage	Vessels	Tonnage	Vessels	Tonnage
1915	484	1,657,728	331	603,546	8,527	4,222,426	9,387	6,483,800
1916	569	1,965,161	129	169,295	7,297	3,558,872	7,995	5,693,328
1917	579	1,984,233	68	26,534	6,274	3,206,542	6,921	5,217,309
1918	644	1,910,621	30	22,611	6,102	3,313,908	6,776	5,247,390
1919	702	2,041,638	84	137,642	7,499	4,357,734	8,280	6,537,014
1920	638	2,020,519	25	11,210	4,403	4,287,714	5,066	6,319,443
1921	807	2,598,494	157	293,462	4,577	6,843,494	5,541	9,735,450
1922	969	3,453,059	225	479,578	5,789	9,157,062	6,983	13,089,699
1923	892	3,221,781	190	461,939	5,609	8,195,308	6,691	11,879,028
1924	988	3,597,147	235	499,185	5,791	11,215,764	7,014	15,312,096

PORT OF MONTREAL

Statement showing the dates of the Opening and Closing of Navigation, the First Arrival and the Last Departure for Sea; also the greatest Number of Vessels in the Port at one time, during the past ten years.

Year	Opening of Navigation	Closing of Navigation	First Arrival from Sea	Last Departure for Sea	Greatest number of Vessels in Port at one time			
					Seagoing		Inland	
					No.	Date	No.	Date
1915.....	April 11th	Dec. 15th	April 30th	Dec. 11th	34	Sept. 21st	66	July 26th
1916.....	" 22nd	" 18th	May 1st	" 6th	41	" 12th	62	" 25th
1917.....	" 19th	" 7th	" 1st	" 7th	37	Nov. 12th	52	Sept. 11th
1918.....	" 21st	" 17th	" 7th	" 14th	46	" 7th	50	Oct. 10th
1919.....	" 14th	" 12th	April 22nd	" 10th	35	June 12th	54	Aug. 24th
1920.....	" 18th	" 11th	" 25th	" 11th	43	Aug. 18th	43	Sept. 14th
1921.....	March 29th	" 14th	" 21st	" 8th	78	Sept. 7th	43	July 16th
1922.....	April 13th	" 6th	" 24th	" 2nd	91	Oct. 24th	55	Aug. 21st
1923.....	" 29th	" 18th	May 3rd	" 1st	63	May 23rd	52	" 4th
1924.....	" 18th	" 12th	April 24th	" 3rd	80	Nov. 4th	43	June 17th

LIST OF HARBOUR COMMISSIONERS FLOATING PLANT

1924

Description of Vessel	Hull. Length	Hull. Breadth	Hull. Depth	When built	Engines. Kind of Engine	No. of cylinders	Dia. of cylinders	Length of stroke	Pressure of steam	Capacity of Bucket	Depth to which Dredge can work	Remarks
	ft. in. over all	ft. in. beam	ft. in. over all				inches	inches	lbs.	c.y.	ft.	
Dredges			10 Fd. 0									
Boom Spoon Dredge J. Kennedy	104 0	38 0	8 Aft. 3	1892	Horizontal non-condensing	2	16	18	128	7	40	Steel Hull, Rblt. 1923-24
" " " No. 5	104 0	36 0	10 9	1910		2	16	18	140	7	40	Steel Hull.
" " " No. 6	104 0	39 0	10 9	1912		2	16	18	140	7	50	Steel Hull.
Derricks												
Clam shell Derrick No. 1	76 0	27 6	8 0	1899	Horizontal high pressure	2	12	14	110			Wooden hull.
" " " No. 3	76 0	27 6	8 0	1900		2	12	14	110			Wooden hull. Rebuilt 1923
" " " No. 4	75 0	26 10	7 6	1892		2	12	14	110			Wooden hull. Rebuilt 1923
" " " No. 5	75 0	26 10	7 6	1892		2	12	14	110			Wooden hull. Rebuilt 1923
" " " No. 6	75 0	26 10	7 6	1892		2	12	14	110			Wooden hull.
" " " No. 8	88 0	31 0	9 8	1915		2	12	14	140			Wooden hull.
Drilling & Blasting Boat	80 0	27 0	5 6	1895		.....	.....	.....	100			Three 5 in. steam drills. Rebuilt 1923
Steam Yacht "Bethalma"	110 4	16 5	10 2	Purch. 1923	Triple Expansion condensing	1 1 1	9 14½ 25	18	200			Steel hull. Rebuilt 1921
Tug Boats			Hold									
Tug "St. Peter" (Fire Tug)	74 8	16 1	8 6	1875	Vertical non-condensing	1	20	22	125			Wooden hull, Rblt. 1903
"Aberdeen"	79 3	18 3	9 0	1895	Vertical condensing	1 1	16 32	24	120			Steel hull.
"Robert Mackay"	80 9	17 6	10 0	1899		1 1	16 32	24	125			Steel hull.

" "Sir Hugh Allan".....	130	0	26	6	15	0	1911	Vertical triple expansion condensing	1 1 1	16 25 40	24	180		Steel hull, twin screws.
" "Hon. John Young".....	91	8	22	0	9	0	1911	Vertical compound condensing	1 1	12 24	18	140		Steel hull, twin screws.
" "Passe-Partout".....	49	1	11	3	5	7	1912	Vertical high pressure	1 1	9	10	125		Wooden hull.
" "David Seath".....	75	0	19	0	10	2	1915	Vertical condensing	1	13 26	22	150		Wooden hull.
					over	all								
Testing boat.....	73 73	3 3	14 14	0 0	3 3	1 1	1897							Two wooden scows braced 16 ft. apart; overhauled 1924
Scows.								**Capacity.**						
2 Flat deck scows Nos. 2 & 4....	75	0	20	2	6	0	1876	67½ yds.						
1 " " No. 10.....	90	0	20	0	5	5	....	80 "						
2 " " Nos. 21 & 22..	85	0	25	0	7	5	1891	150 "						
1 " " No. 23.....	85	0	25	0	6	9	1891	150 "						
4 " " Nos. 26-29....	85	0	25	0	6	9	1892	150 "						
5 " " Nos. 31-35....	85	0	25	0	6	9	1893	150 "						
2 " " Nos. 39 & 40..	85	0	25	0	6	9	1903	150 "						
2 " " Nos. 41 & 42..	87	0	25	0	7	6	1904	150 "						
18 " " Nos. 43-60....	100	0	30	0	9	0	1911–23	300 "						
2 Dump scows, Nos. 36 & 37..	106	0	26	10	9	6	1899	200 "						
1 " " No. 38.....	106	0	26	10	9	6	1900	200 "						Rebuilt 1924
2 " " (Gilbert's)....	60	0	20	0	6	0	....	100 "						
1 large coal scow.....	138	0	32	0	8	5	....	400 tons						
1 floating concrete machine.....	100	0	34	0	8	6	1915 Reblt							
1 floating pile driver.....	50	9	24	2	5	8	1896							
2 floating elevators, Nos. 17 & 18	90	0	28	0	5	6	1904	Operating hor. Propelling "	1 1	15 15	34 18	100 100		Capacity each about 7,000 bus. per hour

AVERAGE DEPTH FOR EACH MONTH IN THE 30-FOOT CHANNEL AT SOREL

(30 Feet at Extreme Low Water of 1897)

Year	May	June	July	August	September	October	November	High	Low
1907.....	37′ 1″	35′ 9″	34′ 3″	32′ 10″	32′ 4″	32′ 9″	33′ 7″	38′ 3″	31′ 10″
1908.....	41′ 5″	37′ 10″	33′ 10″	32′ 10″	32′ 0″	31′ 0″	30′ 6″	42′ 4″	30′ 0″
1909.....	40′ 6″	37′ 6″	33′ 10″	33′ 2″	32′ 7″	32′ 4″	31′ 6″	42′ 7″	30′ 11″
1910.....	35′ 7″	34′ 5″	32′ 3″	31′ 7″	31′ 6″	31′ 6″	31′ 7″	37′ 1″	30′ 7″
1911.....	36′ 6″	34′ 6″	32′ 1″	31′ 3″	30′ 9″	30′ 2″	30′ 3″	38′ 1″	29′ 4″
1912.....	37′ 9″	37′ 6″	33′ 6″	32′ 8″	32′ 6″	32′ 6″	34′ 9″	40′ 11″	31′ 3″
1913.....	37′ 0″	34′ 4″	32′ 8″	31′ 10″	31′ 6″	32′ 1″	32′ 7″	38′ 6″	31′ 1″
1914.....	35′ 2″	33′ 0″	32′ 4″	31′ 4″	31′ 3″	30′ 11″	31′ 0″	36′ 10″	30′ 3″
1915.....	34′ 7″	32′ 6″	31′ 6″	31′ 4″	31′ 1″	30′ 11″	30′ 8″	37′ 4″	30′ 1″
1916.....	38′ 9″	37′ 2″	34′ 0″	32′ 5″	31′ 7″	31′ 9″	31′ 10″	40′ 0″	30′ 9″
1917.....	36′ 8″	36′ 6″	34′ 10″	33′ 6″	32′ 3″	32′ 6″	33′ 0″	38′ 2″	31′ 3″
1918.....	35′ 1″	33′ 0″	32′ 10″	30′ 11″	31′ 4″	32′ 6″	33′ 10″	36′ 11″	30′ 3″
1919.....	38′ 7″	35′ 7″	32′ 5″	31′ 4″	31′ 1″	31′ 7″	32′ 9″	39′ 11″	30′ 3″
1920.....	33′ 7″	30′ 10″	30′ 4″	29′ 9″	29′ 4″	29′ 4″	29′ 4″	34′ 8″	28′ 3″
1921.....	34′ 7″	31′ 9″	30′ 10″	31′ 7″	29′ 10″	30′ 2″	30′ 5″	37′ 6″	30′ 1″
1922.....	36′ 0″	33′ 9″	34′ 2″	32′ 2″	31′ 2″	31′ 3″	30′ 11″	37′ 8″	30′ 1″
1923.....	38′ 4″	34′ 6″	32′ 4″	31′ 5″	31′ 4″	30′ 11″	30′ 9″	39′ 1″	30′ 0″
1924.....	38′ 7″	34′ 5″	32′ 5″	31′ 10′	31′ 11″	32′ 3″	31′ 3″	40′ 0″	30′ 1″

APPENDIX "A."

14-15 GEORGE V.

CHAP. 58.

An Act to amend The Montreal Harbour Commissioners Act, 1894.

[*Assented to 19th July, 1924.*]

His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

1. Subsection two of section twenty-two of *The Montreal Harbour Commissioners Act, 1894*, as amended by section five of chapter twenty-four of the statutes of 1909, is further amended by adding the following paragraph thereto:—

"(6) (*a*) Build, own, maintain, manage, operate and use a bridge for general traffic including tramways across the river St. Lawrence from a point in the City of Montreal to a point on the south shore of the said river to be determined by the Corporation, with all necessary or useful appurtenances or accessories.

(*b*) For the above purposes, including the building of the necessary approaches to the bridge, the said Corporation may enter on lands to make surveys and other preliminary work, take or use any part of the harbour of Montreal and of St. Helen's Island and Ile Ronde, also any street, highway, road, lane, square or public place, and may cross railways or tramways and may purchase, acquire, or take any necessary land or property owned by any person or corporation, or any servitude thereon.

(*c*) Any expropriation that may be required for the above purposes shall be governed by section thirty-four of this Act, except that the approval of plans therein provided shall be given by the Board of Railway Commissioners, and not by the Governor in Council.

(*d*) The crossing of any railway or tramway by the bridge or approaches shall be as to place, manner, terms and conditions or other respects, subject to the approval of the Board of Railway Commissioners.

(*e*) Failing an agreement with any municipal corporation or other competent authority as to the taking or use of a street, highway, road, lane, square or public place which may be required for the above purposes, the Board of Railway Commissioners shall determine the extent, nature, terms and conditions of such taking or use, and all other questions arising in connection therewith.

(*f*) The plans of such bridge shall be submitted to and approved by the Governor in Council before beginning the construction thereof.

(*g*) The Corporation may, subject to the approval of the Governor in Council, charge and recover tolls for the use of or passage on such bridge.

(*h*) The Corporation may make agreements for receiving and may receive, take and hold grants and donations of property moveable or immoveable, or money or any other form of aid from any Government, municipality, corporation or person.

(*i*) The Corporation may, for the above purposes, and from time to time, borrow money or issue and sell or pledge bonds for such amounts, at such rate of interest and on such terms and conditions as it may determine, and it may secure such bonds or loans by a mortgage or hypothec on the said bridge and by a charge on the tolls and revenues thereof."

2. Any such loans or bonds shall as to form, terms and amount be subject to the approval of the Governor in Council, and the said securities or bonds may in whole or in part as to principal, interest or both be guaranteed by His Majesty. Any such guarantee may be in such form and on such terms and conditions as the Governor in Council may determine, and may be signed by the Minister or Acting Minister of Finance on behalf of His Majesty.